CHAPTER 13

AIRCRAFT PANEL MOUNTED OXYGEN REGULATORS 29270 AND 3260011 SERIES

Section 13-1. Description

13-1. GENERAL.

NOTE

For CRU-96/A, P/N 29255-6BB1 and CRU-97/A, P/N 29255-10AB-12, refer to paragraph 13-59 for Bench Testing procedures and paragraph 13-115, step 3 for lamp installation procedures until formal maintenance chapters are incorporated in manual. Record bench test readings utilizing figure 13-3.

13-2. Aircraft Panel Mounted Oxygen Regulators, P/N 29270 and 3260011 Series (CAGE 99251) (figure 13-1), are manufactured by Litton Industries. They are designed to regulate breathing oxygen supplied to the aircrewmember during flight. Table 13-1 contains leading particulars for the regulators.

13-3. All controls and indicators necessary for indication of performance and operation of the regulator are located on an illuminated panel with the regulating components attached to the mounting plate and controls assembly.

13-4. The regulators are panel-mounted, automatic positive pressure diluter demand-type regulators and are used in conjunction with a pressure breathing type oxygen mask. The regulators provide 100% oxygen or an air/oxygen mixture at the correct ratio, depending on altitude, to the user on demand. The regulators incorporate an emergency pressure control toggle. During normal operation, the toggle is set in the NORMAL position. A TEST MASK position is provided to test the oxygen supply function of the regulator at low altitudes and ground level. When in the EMERGENCY position, the regulator delivers 100% oxygen to the user at a positive pressure. The EMERGENCY position is used when inadequate oxygen supply is suspected.

13-5. CONFIGURATION.

13-6. The regulators are supplied in one basic configuration: low pressure (50 to 500 psig operating pressure range).

13-7. FUNCTION.

13-8. Characteristics and performance for which the regulators are designed are described below.

NOTE

Numbers in parentheses relate to numbers in figure 13-2.

1. Supply oxygen is admitted to the regulator through the inlet valve assembly (1) and is registered on the oxygen supply pressure gage (23) regardless of the position of the supply toggle (15). The oxygen passes into the pressure reducer assembly (2) where pressure is reduced to 37 to 47 psig.

2. Air is admitted to the regulator through the aneroid and air shutoff assembly (4). The air oxygen mixture is delivered to the mask by means of a flexible hose attached to the regulator outlet (5).

3. The flow indicator blinker assembly (6) is secured in the mounting panel and is seen through the window in the panel. The pressure drop across the injector assembly (8) operates the blinker assembly. When the face shows white, the blinker is in a breathing cycle. When the flow stops, the pressure is equalized through the flow indicator feedback passage (14). The blinker returns to the normal position and the face shows black. Thus, an indication of flow is shown at each breathing cycle.

4. The demand valve assembly (7) is positioned in a chamber that has three openings. The one at the upstream end of the valve opens into the pressure-reducer chamber. The other two are on the downstream side of the valve. One opens into the flow indicator channel and the other opens into the injector assembly (8). The valve is maintained in its normally closed position by the spring-loaded demand valve lever that is in contact with the valve stem. When the mask wearer inhales, the inner diaphragm (11) moves inward and opens the demand valve through the medium of a linkage system.

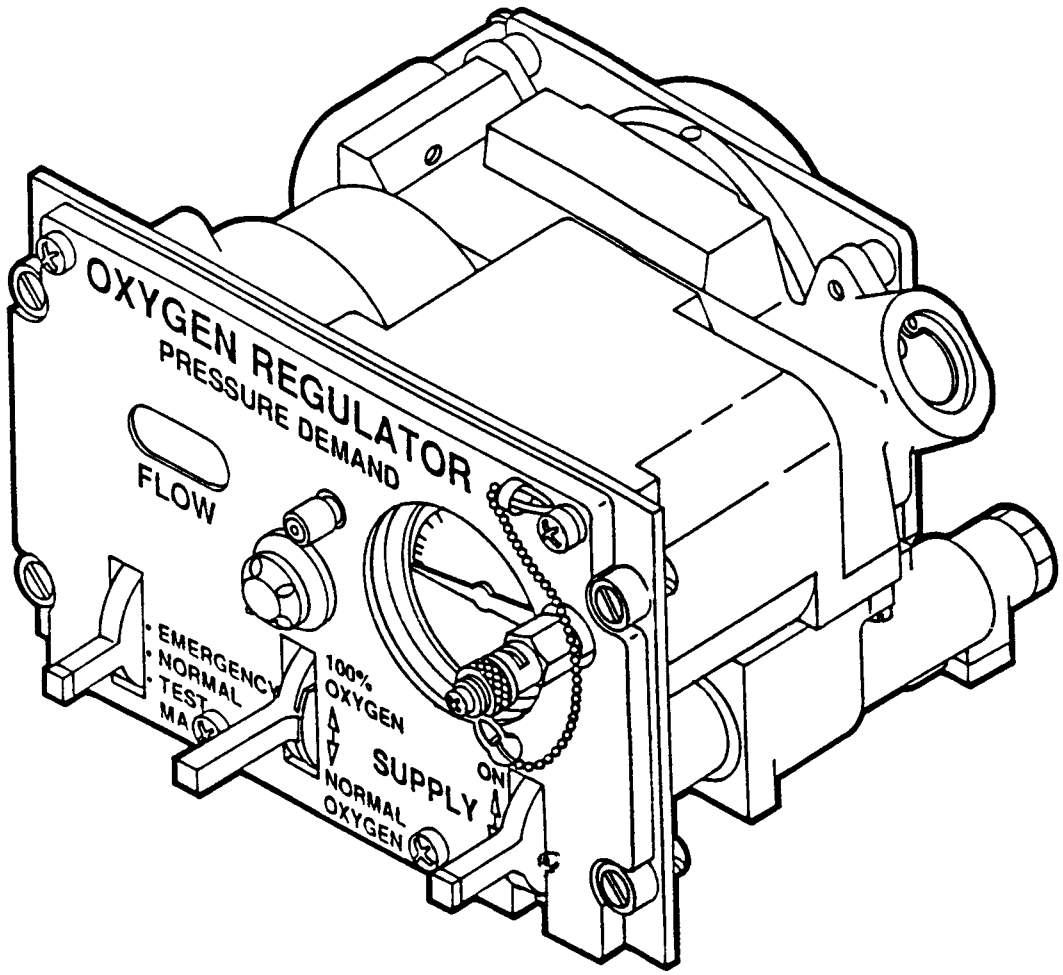

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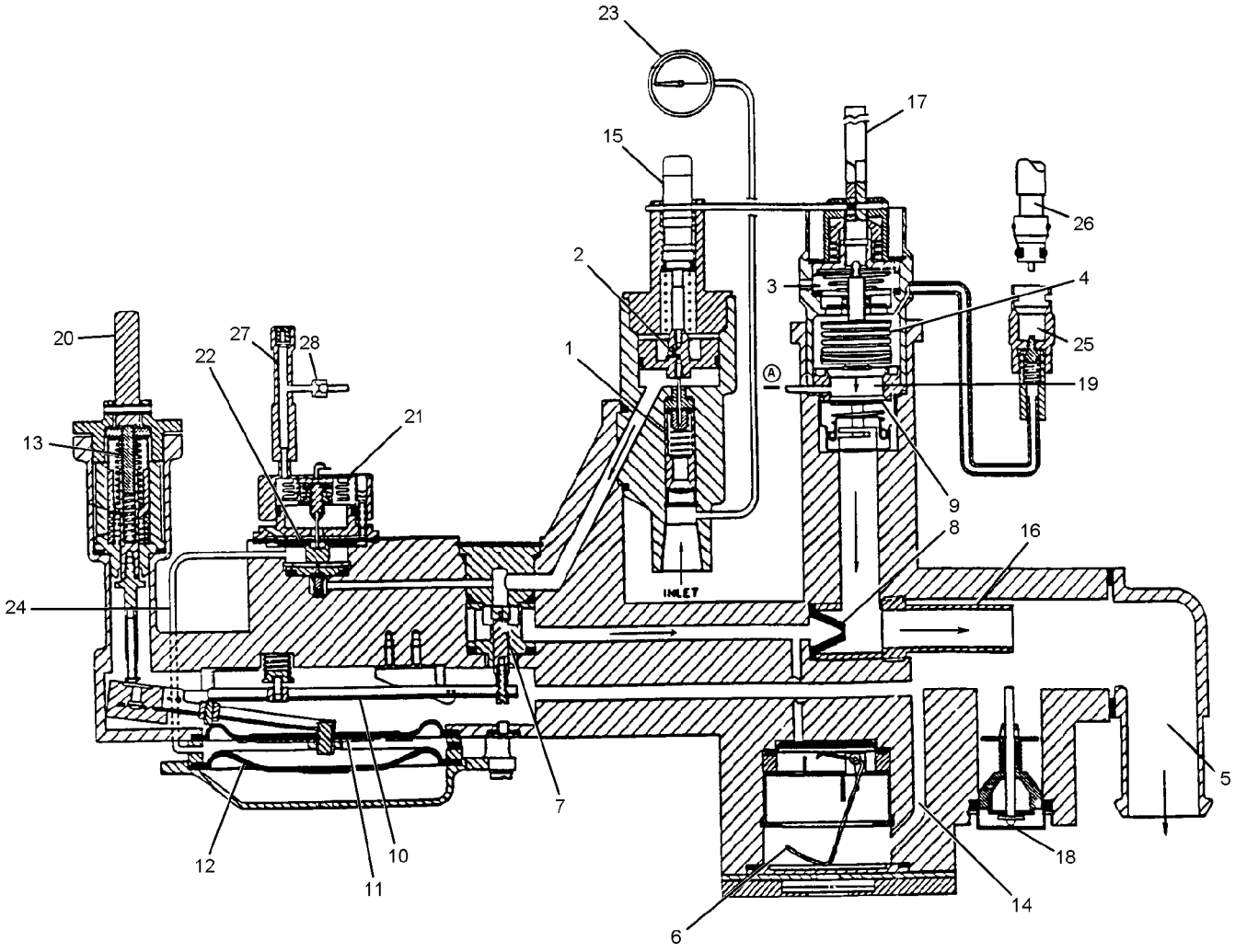
Figure 13-1. Aircraft Panel Mounted Regulator, Low Pressure, P/Ns 29270-10A-B1, 29270-10A-B2, 29270-10A-A1, 3260011-0701, and 3260011-0101



1. INLET VALVE ASSEMBLY
2. PRESSURE REDUCER ASSEMBLY
3. AIR
4. ANEROID/AIR SHUTOFF ASSEMBLY
5. REGULATOR OUTLET
6. FLOW INDICATOR BLINKER ASSEMBLY
7. DEMAND VALVE ASSEMBLY
8. INJECTOR ASSEMBLY
9. CHECK VALVE ADAPTER AND SPRING ASSEMBLY
10. LEVER AND BRACKET ASSEMBLY
11. INNER DIAPHRAGM
12. OUTER DIAPHRAGM
13. MANUAL SAFETY PRESSURE ASSEMBLY
14. FLOW INDICATOR FEED BACK PASSAGE
15. SUPPLY TOGGLE
16. MIXING TUBE
17. DILUTER TOGGLE
18. RELIEF VALVE
19. AIR VALVE FLANGE
20. EMERGENCY PRESSURE TOGGLE
21. PRESSURE BREATHING ANEROID
22. PRESSURE BREATHING SEAT AND MATCHED VALVE ASSEMBLY
23. OXYGEN SUPPLY PRESSURE GAGE
24. PRESSURE BREATHING SENSING TUBE
25. AIR INLET TEST PORT
26. HOSE AND FITTING ASSEMBLY
27. VACUUM PORT
28. AIR SHUTOFF CHECK VALVE

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Figure 13-2. Regulator Operation

Table 13-1. Leading Particulars

Low Pressure	50 to 500 psig
Voltage	6 or 28 Vdc
Mounting	Panel
Operating Altitude Range:	
Normal Breathing	Up to 30,000 ft
Pressure Breathing Starts	At 30,000 ft
Air-Oxygen Mixture	At 32,000 ft
Visual Indicators	Pressure Gage and Flow
Regulator Controls:	Indicator on Front Panel
Diluter Toggle	Selects NORMAL or 100% OXYGEN
Supply Toggle	Opens and closes oxygen supply
Emergency Toggle	For emergency, and ground test of mask
Overall Dimensions:	
Length	5.75 in.
Width	3.00 in.
Height	4.25 in.
Weight	2.75 lb

5. The injector assembly (8) consists of a silicone nozzle and a housing. These are mounted in the regulator housing, downstream from the demand valve assembly (7) and upstream from the mixing tube (16). The injector housing is positioned in the regulator housing so the cutaway portion of the injector is open to the port from the aneroid and air shutoff assembly (4). When the demand valve is opened, oxygen is forced through the nozzle in the injector, and to the oxygen mask. The flow of oxygen through the nozzle causes a low pressure area that opens the check valve adapter and spring assembly, allowing ambient air to mix with the oxygen, when the diluter toggle is at NORMAL OXYGEN and altitude is below 32,000 feet. Excessive pressure in the regulator is prevented by the relief valve (18).

6. The aneroid and air shut off assembly (4) contains an aneroid that gradually expands as atmospheric pressure decreases. Expansion of the aneroid progressively decreases the distance separating a throttling plate and an air valve flange (19) until, at an altitude approximately 32,000 feet, the air passage through the regulator is completely closed.

7. The check valve adapter and spring assembly (9) consists of a spring-loaded disc pressing against a seat at the bottom of the aneroid housing. When seated, the check valve closes the air passage. Inhalation unseats the check valve and allows air to be sucked in through the aneroid and air shut off assembly (4). The air mixes with the oxygen in the mixing tube (16) and the resulting mixture passes to the mask.

8. The lever and bracket assembly (10) is part of a linkage system connecting the inner diaphragm (11) and the demand valve assembly (7). By placing the emergency pressure toggle (20) in the EMERGENCY or TEST MASK position, the lever and bracket assembly will be depressed which, in turn, depresses the demand valve lever and opens the demand valve assembly (7) to permit a flow of oxygen.

9. The manual safety pressure assembly (13) is a mechanism that can be manually operated under emergency conditions to increase the outlet pressure of the oxygen regulator. The mechanism includes the emergency pressure toggle that can be moved to the EMERGENCY, NORMAL, or TEST MASK position.

10. The pressure breathing assembly consists of a pressure breathing aneroid (21) and a pressure breathing seat and matched valve assembly (22). At approximately 30,000 feet the assembly begins to function, delivering an automatic positive pressure to the user.

13-9. SERVICE LIFE.

13-10. Oxygen regulators shall remain in service for as long as they function correctly and do not require excessive repair (exceeds 75% of original cost of regulator). All affected silicone rubber parts shall be replaced whenever a regulator is disassembled for repair.

13-11. REFERENCE NUMBERS, ITEMS AND SUPPLY DATA.

13-12. Section 13-5, Illustrated Parts Breakdown contains information on each assembly, subassembly, and component part of the regulators. The figure and index number, reference or part number, description, units per assembly are provided with the breakdown.

Section 13-2. Modifications

13-13. GENERAL.

13-14. There are currently no authorized modifications for the Aircraft Panel Mounted Oxygen Regulators.

Section 13-3. Performance Test Sheet Preparation

13-15. GENERAL.

13-16. Preparation of Oxygen Regulator Performance Test Sheets require that, through the various graphs, actual flows given in applicable directives and provided in this section be converted to indicated flows.

13-17. Flows provided in applicable directives are stated in liters per minute (lpm) and are not measurable by the manometers used in oxygen regulator test stands. The flow must be converted to inches of water pressure (inH_2O), the form of measurement that can be read on the test stand manometers.

NOTE

The various graphs supplied with each Oxygen System Components Test Stand, Model 1172AS100 or Model 1316AS100 are used in converting flows. The graphs supplied are not interchangeable between test stands.

13-18. The information provided in the tables in this section is to be recorded on the Performance Test Sheet (figure 13-3).

13-19. The Performance Test Sheet (figure 13-3) is a sample only, but may be reproduced for local use.

13-20. The following tests require conversion of flows from actual lpm to indicated inH_2O.

1. Relief Valve Test.
2. Flow Suction Test.
3. Oxygen Ratio Test.
4. Safety Pressure/Pressure Breathing Test.
5. Blinker (Flow Indicator) Test.
6. Emergency Pressure Test.

13-21. REGULATOR PERFORMANCE TESTS.

13-22. RELIEF VALVE TEST. The relief valve shall vent at least 45 lpm at a specified pressure. The actual 45 lpm flow must be converted to an indicated inH_2O flow by using the nitrogen (N_2) line of the Vent Flow Graph. Convert the actual flow as follows:

1. Locate the 45 lpm line on the bottom of the Vent Flow Graph, and trace the line up to where it intersects the N_2 line.

2. Trace the line on the graph where the lpm and N_2 lines intersect across the graph to the left hand column to determine indicated inH_2O.

3. Enter this information in the appropriate block on the Performance Test Sheet.

13-23. FLOW SUCTION TEST. The Flow Suction Test shall be performed at sea level with the diluter control lever in both the 100% OXYGEN and NORMAL OXYGEN position. Actual (lpm) flows are converted to indicated (inH_2O) flows by using the Sea Level Output Graph. The air line is used for NORMAL OXYGEN flows, and the N_2 line is used for 100% OXYGEN flows. Convert the actual flows as follows.

REGULATOR PERFORMANCE TEST SHEET

29270 AND 3260011
SERIES REGULATORS

DATE _____ TYPE _____ SERIAL NO. _____

TEST STAND SERIAL NO. _____ TESTED BY _____ CDI _____

1. INWARD LEAKAGE TEST _____ 2. OUTLET LEAKAGE TEST _____
3. OXYGEN SUPPLY VALVE LEAKAGE TEST _____ 4. OVERALL LEAKAGE TEST _____
5. PRESSURE GAGE TEST: NOTE: TESTED AT AMBIENT TEMPERATURE OF 70°F.

LOW PRESSURE REGULATOR ONLY

PRESSURE GAGE (PSIG)	TOLERANCE PSIG	BEFORE TAP	AFTER TAP
50	± 10		
100	± 25		
500	± 25		

6. OUTWARD LEAKAGE TEST _____
7. RELIEF VALVE TEST
   a. VENTS 45 LPM _____ AT 40.7 INH_2O (3 INHg)
   b. LEAKAGE AT 17 INH_2O _____
8. FLOW SUCTION TEST

ALTITUDE	INLET PRESSURE (PSIG)	ACTUAL OUTPUT (LPM)	NORMAL		100 PERCENT		MAXIMUM SUCTION (INH_2O)
			INDICATED OUTPUT	READING	INDICATED OUTPUT	READING	
SEA LEVEL	50	30					-0.50
SEA LEVEL	150	50					-0.70
SEA LEVEL	150	85					-1.0

9. OXYGEN RATIO TEST (INLET PRESSURE 50 PSIG FOR LOW PRESSURE REGULATORS)

ALTITUDE (1000 FT)	OXYGEN PERCENT		OUTPUT				INPUT				
	MIN	MAX	AVERAGE PERCENT	ACTUAL OUTPUT (LPM)	INDICATED OUTPUT (INH_2O)	CORRECTED INDICATED OUTPUT	ACT HI	ACT LOW	IND HI	IND LOW	READING
10	6	45	25.5	15			14.1	8.25			
10	6	60	33	85			79.9	34			
20	24	55	39.5	15			11.4	6.75			
20	24	80	52	85			64.6	17			
28	60	100	80	15			6	0		0	
28	60	100	80	85			34	0		0	
32	98	100	99	85			1.7	0		0	

10. ANEROID AIR VALVE CLOSURE TEST (28,000 TO 32,000 FEET) PERFORMED ONLY IF REGULATOR FAILS OXYGEN RATIO TEST _____

Figure 13-3. Performance Test Sheet (Sheet 1 of 2)

11. SAFETY PRESSURE/PRESSURE BREATHING TEST (INLET PRESSURE 50 PSIG FOR LOW PRESSURE REGULATORS)

ALTITUDE (1000 FT)	OUTPUT		PRESSURE (INH_2O)		
	ACTUAL (LPM)	INDICATED (INH_2O)	MINIMUM	READING	MAXIMUM
30	0	0	0.01		2.50
30	85		0.01		2.50
40	0	0	0.30		5.60
40	85		0.30		5.60
43	0	0	5.30		12.50
43	85		5.30		12.50
50	0	0	11.20		18.20
50	85		11.20		18.20

12. BLINKER (FLOW INDICATOR) TEST (INLET PRESSURE 50 PSIG FOR LOW PRESSURE REGULATORS)

ALTITUDE/ PRESSURE	DILUTER LEVER	OUTPUT		READING	BLINKER POSITION
		ACTUAL	INDICATED		
SEA LEVEL	NORMAL	20			FULLY OPEN
SEA LEVEL	100%	8			FULLY OPEN
SEA LEVEL	100%	0	0		CLOSE IMMED
17 INH_2O	100%	12			FULLY OPEN
17 INH_2O	100%	0	0		CLOSE IMMED

13. EMERGENCY PRESSURE TEST (INLET PRESSURE 50 PSIG FOR LOW PRESSURE REGULATORS)

OUTPUT		DILUTER LEVER	EMERGENCY LEVER	PRESSURE READING	TOLERANCE (INH_2O)
ACTUAL	INDICATED				
10 LPM		NORMAL	EMERGENCY		2.0 TO 4.0
80 LPM		100%	EMERGENCY		1.0 MIN.
10 LPM		100%	TEST MASK		6.0 TO 16.0

NOTES: WITH ZERO FLOW, OUTLET PRESSURE SHALL NOT EXCEED 17.5 INH_2O WITH EMERGENCY PRESSURE CONTROL LEVER IN TEST MASK POSITION. WITH EMERGENCY PRESSURE CONTROL LEVER IN EMERGENCY POSITION, OUTLET PRESSURE SHALL NOT EXCEED 5.5 INH_2O.

14. REGULATOR OXYGEN PURGE: APPLY 500 PSIG TO LOW PRESSURE REGULATORS WITH AVIATORS BREATHING OXYGEN AND FLOW 1 TO 3 MINUTES.

Figure 13-3. Performance Test Sheet (Sheet 2 of 2)

NOTE

Test Stand Input and Output Flow Graphs may vary in makeup, according to the activity performing the test stand calibration. Some test stands may have a single output graph and input graph with various altitude lines, while others may have separate graphs for each altitude. Ensure the specified graph is used.

1. Locate the desired lpm line (figure 13-3) at the bottom of the Sea Level Output Graph.

2. Trace selected lpm line up to where it intersects the air line (NORMAL indicated output) or N_2 line (100% indicated output).

3. Trace the line from point of intersection across the graph to the left hand column to determine indicated inH_2O.

4. Enter this figure in the appropriate block on the Performance Test Sheet.

5. Repeat steps 1 through 4 for all output flows (lpm) given in figure 13-3.

13-24. OXYGEN RATIO TEST. Actual flows and oxygen percentages (figure 13-3) used for the Oxygen Ratio Test must be converted to indicated flows and oxygen averages. All actual flows must be converted to indicated flows. The results of these computations shall be entered in the appropriate columns within the Oxygen Ratio Test portion of the Performance Test Sheet. To find average oxygen, indicated output, corrected indicated output, actual and indicated input flows, proceed as follows:

NOTE

Test Stand Input and Output Flow Graphs may vary in makeup, according to the activity performing the test stand calibration. Some test stands may have a single output graph and input graph with various altitude lines, while others may have separate graphs for each altitude. Ensure the specified graph is used.

13-25. Average Oxygen. These figures are provided but are computed as follows. Average Oxygen is found by adding the minimum and maximum oxygen percentage (figure 13-3) then dividing the sum by 2 (e.g., 6% + 45% = 51% ÷ 2 = 25.5%).

1. Enter the resulting figure (25.5%) in the appropriate block on the Performance Test Sheet.

2. Repeat this procedure for all minimum and maximum oxygen percentages.

13-26. Indicated Output. To convert the actual output flows (lpm) given in figure 13-3 to Indicated Output flows (inH_2O), proceed as follows:

1. Locate the desired actual output at the bottom of the Output Graph. (figure 13-3).

2. Trace the selected line up to the point of intersection with the appropriate altitude air line.

3. Trace the line on the graph from where the desired lpm and the altitude air lines intersect across the graph to the left hand column to determine indicated inH_2O.

4. Enter this figure in the appropriate block on the Performance Test Sheet.

NOTE

Flows at 28,000 and 32,000 feet are converted by using the next higher altitude air line or Output Graph (e.g. 30,000-foot Output Graph or 35,000-foot Output Graph).

5. Repeat steps 1 through 4 for all actual output flows given in figure 13-3.

13-27. Corrected Indicated Output. Corrected Indicated Output is indicated output with the required percentage of nitrogen added. To find Corrected Indicated Output, proceed as follows:

NOTE

Use Oxygen/Air/Nitrogen Conversion Graph provided in NAVAIR 17-15BC-21.

1. Locate the indicated output (inH_2O) at the bottom of the Oxygen/Air/Nitrogen Conversion Graph.

2. Find the average oxygen percentage on the Performance Test Sheet corresponding to the selected indicated output.

NOTE

Select percentage line on Oxygen/Air/Nitrogen Conversion Graph nearest to average oxygen figure selected from Average Oxygen column on Performance Test Sheet.

3. Follow the indicated output line selected on the Oxygen/Air/Nitrogen Conversion Graph up to the appropriate N_2 percentage line.

4. Trace the line on the graph where the selected indicated output and N_2 percentage lines intersect across the left hand column to determine inH_2O.

5. Enter this figure in the appropriate block on the Performance Test Sheet.

6. Repeat steps 1 through 5 for all required indicated output flows.

13-28. Actual High Air. These figures are provided, but are computed as follows. Find the Actual High Air by subtracting the minimum oxygen percentage (figure 13-3) from 100%; multiply the result by the corresponding actual output (e.g., 100% - 6% = 94% x 15 lpm = 14.10 lpm).

1. Enter 14.10 lpm in the actual high air column on the Performance Test Sheet.

2. Repeat the procedures for all minimum oxygen procedures given.

13-29. Actual Low Air. These figures are provided but are computed as follows. Find the Actual Low Air by subtracting the maximum oxygen percentage (figure 13-3) from 100%; multiply the result by the corresponding actual output (e.g., 100% - 45% = 55% x 15 lpm = 8.25 lpm).

1. Enter 8.25 lpm in the actual low air column on the Performance Test Sheet.

2. Repeat the procedures for all maximum oxygen percentages given.

13-30. Indicated High Air (Input). To convert Actual High Air to Indicated High Air, proceed as follows:

1. Locate the actual input (lpm) at the bottom of the Test Stand Input Graph.

NOTE

Flows at 28,000 and 32,000 feet are converted by using the next higher altitude air line or Input Graph (e.g. 30,000-foot Input Graph or 35,000-foot Input Graph).

2. Trace the selected line up to where it intersects the appropriate altitude line.

3. Trace the line on the graph where the actual input and desired altitude lines intersect across the graph to the left hand column to determine indicated inH_2O.

4. Enter this figure in the appropriate block on the Performance Test Sheet.

5. Repeat steps 1 through 4 for all Actual High Air figures previously entered on Performance Test Sheet.

13-31. Indicated Low Air (Input). To convert Actual Low Air to Indicated Low Air, proceed as follows:

1. Locate the actual input (lpm) at the bottom of the Test Stand Input Graph.

2. Trace the selected line up to where it intersects the appropriate altitude line.

3. Trace the line on the graph where the actual input and desired altitude lines intersect across the graph to the left hand column to determine indicated inH_2O.

4. Enter this figure in the appropriate block on the Performance Test Sheet.

5. Repeat steps 1 through 4 for all Actual Low Air figures previously entered on Performance Test Sheet.

13-32. SAFETY PRESSURE AND PRESSURE BREATHING TEST. Actual output flows (lpm) given in the Safety Pressure Breathing Test section of the Performance Test Sheet must be converted to indicated output flows (inH_2O). To convert the flows, proceed as follows:

NOTE

Test Stand Input and Output Flow Graphs may vary in makeup, according to the activity performing the test stand calibration. Some test stands may have a single output graph and input graph with various altitude lines, while others may have separate graphs for each altitude. Ensure the specified graph is used.

1. Locate the desired actual output (figure 13-3) at the bottom of the Test Stand Output Graph.

2. Trace the selected line up to where it intersects the N_2 line, then across the graph to the left hand column to determine indicated inH_2O.

3. Enter this figure in the appropriate block on the Performance Test Sheet.

NOTE

Flows at 43,000 feet are converted using the 45,000-foot N_2 line on the Output Graph, or the 45,000-foot Output Graph.

4. Repeat steps 1 through 4 for all actual flows given in the Safety Pressure and Pressure Breathing Test section on Performance Test Sheet.

13-33. BLINKER (FLOW INDICATOR) TEST. Actual output flows (lpm) for the Blinker Test section of the Performance Test Sheet must be converted to indicated output flows (inH_2O). To convert the flows refer to paragraphs 13-34 through 13-36.

13-34. Diluter Toggle Normal Oxygen Position. Use the air line of the Sea Level Output Graph.

1. Locate the actual output (figure 13-3) at the bottom of the graph and trace the selected line up to the air line.

2. Trace the line where the actual output and air lines intersect across the graph to the left hand column to determine indicated inH_2O.

3. Enter this figure in the appropriate block on the Performance Test Sheet.

13-35. Diluter Toggle 100 Percent Oxygen Position (Sea Level). Use the N_2 line on the Sea Level Output Graph.

1. Locate actual output (lpm) (figure 13-3) at the bottom of the graph and trace the selected line up to the N_2 line.

2. Trace the line where the actual output and N_2 lines intersect across the graph to the left hand column to determine indicated inH_2O.

3. Enter this figure in the appropriate block on the Performance Test Sheet.

13-36. Diluter Toggle 100 Percent Oxygen Position (17 inH_2O). Use the 50,000-foot N_2 line on the Output Graph.

1. Locate actual output (lpm) (figure 13-3) at the bottom of the Output Graph (or 50,000-foot Output Graph) and follow selected line up to the 50,000-foot N_2 line.

2. Trace the line where the actual output and N_2 lines intersect across the graph to the left hand column to determine indicated inH_2O.

3. Enter this figure in the appropriate block on the Performance Test Sheet.

13-37. EMERGENCY PRESSURE TEST. Actual output flows (lpm) specified for the Emergency Pressure Test can be found in the Emergency Pressure Test section of the Performance Test Sheet. Actual flows must be converted to indicated flows (inH_2O). To convert the flows, refer to paragraphs 13-38 through 13-39.

13-38. Diluter Toggle Normal Oxygen Position. Use air line of Sea Level Output Graph.

1. Locate the actual output (lpm) (figure 13-3) at the bottom of the Sea Level Output Graph and trace the selected line up to the air line.

2. Trace the line where the actual output and air lines intersect across the graph to the left hand column to determine indicated inH_2O.

3. Enter this figure in the appropriate block on the Performance Test Sheet.

13-39. Diluter Toggle 100 Percent Oxygen Position. Use the N_2 line on the Sea Level Output Graph.

1. Locate the actual output (lpm) (figure 13-3) at the bottom of the Sea Level Output Graph and trace the selected line up to the N_2 line.

2. Trace the line where the actual output and N_2 lines intersect across the graph to the left hand column to determine indicated inH_2O.

3. Enter this figure in the appropriate block on the Performance Test Sheet.

Section 13-4. Maintenance

13-40. GENERAL.

13-41. This section contains the procedural steps for inspecting, testing, troubleshooting, disassembly, cleaning, assembly, and adjusting of aircraft panel mounted oxygen regulators.

NOTE

The regulators shall be considered beyond economical repair when the cost of repair parts exceeds 75% of original cost of regulator. Upon completion of any maintenance action (e.g., inspection, repair, modification, etc.), be sure to complete the required Maintenance Data Collection System forms.

13-42. Procedural steps outlined in this section are listed under the aircraft inspection cycle in which they are required, and are in the sequence in which they normally occur.

13-43. Bench Test shall be performed on aircraft panel mounted oxygen regulators prior to be being placed in service, and during the Phase/Calendar or Standard Depot Level Maintenance (SDLM) inspection cycle of the aircraft in which installed. See applicable Planned Maintenance System (PMS) publications for specific intervals. In no case shall the interval exceed 448 days. The regulators shall also be subjected to a Bench Test if malfunction is suspected, and after repair or replacement of damaged parts. To ensure damage did not occur during extensive transportation and shipment (via commercial/US Mail); all regulators shall be subjected to a Bench Test, when received from supply, prior to being placed in service.

13-44. Bench Test shall be performed using Oxygen Systems Components Test Stand, Model 1172AS100 or 1316AS100. Refer to appropriate ground support equipment manual for identification of test stand controls and indicators referred to in Bench Test.

13-45. Due to the complexity of the Model 1172AS100 or 1316AS100 test stands, it is essential that the operator become thoroughly familiar with the test stand prior to performing Bench Test. Refer to appropriate ground support equipment manual.

13-46. INSPECTION.

13-47. TURNAROUND/PREFLIGHT/POST FLIGHT/TRANSFER INSPECTION. The Turnaround/Preflight/Postflight/Transfer Inspection consists of a Visual Inspection performed in conjunction with the aircraft inspection requirements for the aircraft in which the regulators are installed. Refer to table 13-2 for assistance in troubleshooting. To perform the inspection, visually inspect the following:

1. Electrical performance of panel light.

2. Legibility of all markings.

3. Plastic lighting plate for cracks and discoloration.

4. Low, or improper reading on pressure gage.

5. Emergency pressure control toggle in NORMAL position.

6. Diluter control toggle in 100% OXYGEN position.

7. Supply control toggle in OFF position.

8. Regulator and surrounding area for freedom from dirt and hydrocarbons.

9. Delivery hose and connector for cuts, fraying, kinking, hydrocarbons, and general condition.

13-48. If discrepancies are found or suspected, Maintenance Control shall be notified.

13-49. Regulators that do not pass inspection and cannot be repaired in the aircraft shall be removed and replaced by Ready-For-Issue (RFI) regulators. Non-RFI regulators shall be forwarded to the nearest maintenance activity having repair capability.

13-50. ACCEPTANCE/SPECIAL/DAILY INSPECTION. The Acceptance/Special/Daily Inspection consists of a Visual Inspection followed by a Functional Test. These inspections and tests shall be performed in conjunction with the aircraft inspection requirements for the aircraft in which the regulators are installed. Refer to table 13-2 for assistance in troubleshooting. To perform the inspection, proceed as follows:

WARNING

Make certain that when working with oxygen; clothing, tubing fittings, and equipment are free of oil, grease, fuel, hydraulic fluid, or any combustible liquid. Fire or explosion may result when even slight traces of combustible material come in contact with oxygen under pressure.

13-51. Visual Inspection. Visually inspect the regulators in accordance with paragraph 13-58.

13-52. Functional Test. To perform Functional Test, proceed as follows:

1. Place supply valve control toggle in ON position.

2. Place diluter control toggle in NORMAL OXYGEN position.

3. Connect oxygen hose quick disconnect. Place mask to face and inhale. Proper regulator operation will be indicated by flow indicator assembly showing white during inhalation and black during exhalation.

NOTE

While at ground level, the regulator will not normally supply oxygen from the supply system to the mask. The emergency pressure control toggle must therefore be used in order to check out the oxygen supply function of the regulator at low altitudes. The emergency toggle is spring loaded at the NORMAL position and will return to NORMAL when released.

4. Hold emergency pressure toggle in TEST MASK position and observe flow indicator. Flow indicator should be white, indicating a flow through regulator.

13-53. Upon completion of Functional Test, secure regulator as follows:

1. Disconnect mask from supply hose.

2. Ensure that emergency pressure control toggle returns to NORMAL position.

3. Place diluter control toggle in 100% OXYGEN position.

4. Place supply valve control toggle in OFF position.

13-54. If discrepancies are found or suspected, Maintenance Control shall be notified.

13-55. Regulators that do not pass inspection and cannot be repaired in the aircraft shall be removed and replaced by Ready-For-Issue (RFI) regulators. Non-RFI regulators shall be forwarded to the nearest maintenance activity having repair capability.

13-56. CALENDAR/PHASED/SDLM INSPECTION. Calendar, Phased, or SDLM Inspection require removal of the regulators from the aircraft. See applicable Planned Maintenance System (PMS) publications for specific intervals. In no case shall the interval exceed 448 days. Upon removal from the aircraft, regulators shall be inspected and bench tested. All work shall be performed in a clean dust-free and oil-free area.

13-57. Aircraft Panel Mounted Oxygen Regulators failing Visual Inspection or Bench Test shall be repaired. SM&R codes define reparability of components and the lowest level of maintenance authorized. Instructions can be found in the current issue of Naval Aviation Maintenance Program, OPNAVINST 4790.2 (Series).

13-58. Visual Inspection. To visually inspect the regulator, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Cloth, Lint-free, White	MIL-C-85043

1. Inspect regulator inlet and outlet for foreign objects, dirt, corrosion, bends, dents, cracks, damaged threads, and any other obvious damage.

2. Ensure that regulator inlet filter is properly installed.

3. Inspect regulator body for bends, dents, cracks, corrosion, condition and legibility of nameplate, security of screws and fittings, and any other obvious damage.

4. Inspect regulator for wear/contamination as follows:

NOTE

It has been determined that this form of lead contamination poses no threat to aircrewmember's health.

Index numbers in parentheses refer to Figure 13-6.

a. Disassemble diaphragm assembly of regulator in accordance with paragraph 13-86.

NOTE

Contamination can be seen in the form of powder that is dull black/gray in color.

b. Using a clean lint-free piece of white cloth, swab area around emergency pressure lever and bracket assembly (121). Examine cloth for traces of contamination.

NOTE

If no contamination is found, assemble the diaphragm assembly in accordance with paragraph 13-110 and perform bench test. If wear/contamination is found, proceed with steps c through f.

c. Disassemble regulator in accordance with paragraph 13-76.

d. Clean the disassembled parts in accordance with paragraph 13-90.

e. Assembly regulator in accordance paragraph 13-96. Ensure emergency pressure lever assembly is replaced with new assembly.

f. Bench Test assembled regulator in accordance with paragraph 13-59.

Table 13-2. Troubleshooting (Daily, Preflight, Special, Turnaround, Transfer, and Acceptance Inspection)

Trouble	Probable Cause	Remedy
Regulator fails to deliver oxygen with emergency toggle in emergency position.	Failure of demand valve to operate.	Replace regulator.
Howling sound or vibration noise emitted from regulator.	Pressure reducer faulty.	Replace regulator.
Regulator delivers constant flow of oxygen when all toggles are in OFF/NORMAL position.	Oxygen inlet valve or demand valve is leaking.	Replace regulator.
Oxygen cylinder pressure gage fails to indicate proper pressure.	Defective gage.	Replace regulator.
	Blocked or leaking supply line.	Replace or clean supply line to regulator.
	Low cylinder pressure.	Refill.
	Defective inlet valve assembly.	Replace regulator.
Oxygen not available at mask with proper pressure source to regulator and other than EMERGENCY setting on regulator.	Regulator controls improperly position.	Correct position of controls.
	Hose to mask is kinked.	Straighten hose and reposition outlet.
	Regulator not functioning properly.	Replace regulator.
Oxygen not available at mask with proper pressure source to regulator and regulator control set at EMERGENCY.	Kink or other malfunction between hose and mask.	Replace or readjust equipment as necessary.
	Faulty linkage from emergency pressure control toggle.	Replace regulator.
Oxygen available at mask but flow is not indicated.	Defective blinker assembly.	Replace regulator.
Gage pressure drops when regulator is not in use.	Loose or leaking connections.	Tighten or replace connections as necessary.
	Defective inlet valve assembly.	Replace regulator.
Panel lamp fails to light.	Burned out lamp.	Replace lamp.
	Faulty lamp assembly.	Replace regulator.
	Faulty electrical hookup to power source.	Repair electrical hookup (figure 13-4).

13-59. BENCH TEST.

13-60. The Bench Test shall be performed using Oxygen Systems Components Test Stand, Model 1172AS100 or 1316AS100. Proceed as follows:

WARNING

Because of possible vacuum pump explosion, only water-pumped nitrogen, Type 1, Class 1, Grade B (Fed Spec BB-N-411) shall be used in testing oxygen regulators. Do not use 3500 psig cylinders. These cylinders can not be certified contaminant free.

For oxygen test stands and purging equipment, use only nitrogen from gray cylinders marked NITROGEN OIL FREE in white letters. Two 3-inch wide black bands mark the tops of these cylinders.

NOTE

Nitrogen supply cylinders utilized in testing oxygen components contain a maximum pressure of 1800 psig. For tests requiring pressures of 1800 psig, utilize highest available pressure, but in no case shall this pressure be less than 500 psig.

Tests are arranged so they proceed from one test to the next with a minimum of flow and altitude changes. Troubleshooting tables are provided following each test.

13-61. Unless otherwise specified in specific tests, the pressure applied, control toggle settings, flows drawn, etc., shall be the same for all regulators.

WARNING

Ensure altitude chamber is configured in accordance with NAVAIR 17-15BC-21, WP003 00, Figure 3, sheets 2 thru 4 as applicable. Ensure High Pressure or Low Pressure Hose Assembly listed in NAVAIR 17-15BC-21, WP031 00, Figure 1 or Figure 2 is attached to N_2 Input Connection (18) or Tee Connection (28) in altitude chamber as applicable for the oxygen regulator being tested. Remove hose assembly not being used and cap connection (18) or (28) when not in use. For regulators requiring inlet pressures greater than 175 psig, the High Pressure Hose Assembly in NAVAIR 17-15BC-21, WP031 00, Figure 1 shall be used.

13-62. INWARD LEAKAGE TEST. To perform the inward leakage test, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Compound, Leak Detection, Type 1	MIL-L-25567
As Required	Nitrogen, Oil-free, Water Pumped, Type I, Class I, Grade B	Fed Spec BB-N-411 NIIN 00-985-7275

Support Equipment Required

Quantity	Description	Reference Number
1	Adapter Assembly	NAVAIR Dwg No. 1172AS136
1	Oxygen Systems Components Test Stand	1172AS100 or 1316AS100

WARNING

Prior to use, inspect leak detection compound. Compound that is not clear and free from suspended material/sediment is considered contaminated and shall be disposed of. Compound exhibiting peculiar odors such as acetone or alcohol is considered contaminated and shall be disposed of.

NOTE

Regulators Bench Tested in this chapter have been designed with test ports located on the face plate. The test ports will not be used during Bench Testing, however the test ports will be checked for leakage.

1. Ensure test stand valves are closed and then open N_2 supply cylinder valve.

2. Place regulator supply control valve lever in the OFF position, and the diluter control lever in the 100% OXYGEN position.

3. Ensure regulator emergency pressure control lever is in NORMAL position. Cap regulator inlet.

NOTE

Regulator shall be mounted on a horizontal plane in the test chamber.

4. If using the Model 1316AS100 test stand, proceed to step 5. If using the Model 1172AS100 test stand, perform the inward leakage test as follows:

a. Using an adapter (NAVAIR Drawing No. 1172AS136), connect the regulator outlet to N_2 INPUT connection (18) in the altitude chamber.

b. Connect a line from LOW PRESS. connection (19) to REF. TAP and connection (21) in altitude chamber. Plug the rubber hose attached to piezometer (26) using piezometer plug supplied with test stand.

WARNING

Ensure that no pressure is indicated on regulated high pressure gage (10), regulated low pressure gage (11), and N_2 input pressure gage (27).

Ensure LOW PRESS. REGULATOR (N) is not loaded. This will prevent N_2 supply cylinder pressure from passing on to INLET PRESS. ON/OFF valve (L), which could damage the test item or cause injury to the test stand operator.

c. Turn INLET PRESS. ON/OFF valve (L) to the ON position.

CAUTION

Vacuum pump vent (54) must be opened one to two turns when operating vacuum pump. Refer to appropriate ground support equipment manual.

d. Turn vacuum pump on.

e. Turn PRESS. SELECTOR valve (D) to the H_2O position. Fully open LEAKAGE CONTROL valve (E).

f. Ensure LEAKAGE SELECTOR valve (F) is in HIGH RANGE position.

NOTE

HIGH RANGE LEAKAGE rotameter (8) is calibrated with an applied pressure of 70 psig. The inward leakage test requires that a suction of 9.0 inH_2O be applied to the regulator outlet and the rotameter. This pressure difference (9.0 inH_2O vice 70 psig) creates a wide variance between actual leakage and indicated leakage. The maximum allowable leakage for the inward leakage test is 200 ccm. An actual leakage of 200 ccm will be displayed on HIGH RANGE LEAKAGE rotameter (8) as an indicated 740 ccm.

g. Slowly open OUTPUT valve (C) until a suction of 9.0 inH_2O is indicated on PRESS./SUCTION manometer (4). Any leakage will be displayed on HIGH RANGE LEAKAGE rotameter (8). The maximum allowable indicated leakage is 740 ccm (actual 200). Record indicated leakage on the Performance Test Sheet.

h. Close OUTPUT valve (C) and LEAKAGE CONTROL valve (E). Turn vacuum pump OFF. Turn INLET PRESS. ON/OFF valve (L) to the OFF position.

i. Disconnect line from LOW PRESS. connection (19) and REF. TAP and connection (21) in altitude chamber. Disconnect regulator outlet from N_2 INPUT connection (18). Remove piezometer plug from piezometer (26). Remove cap from regulator inlet.

j. If excessive leakage is indicated, locate probable cause, using troubleshooting table 13-3.

5. If using the Model 1316AS100 test stand proceed as follows:

a. Connect piezometer (26) to regulator outlet. Connect a line from REF. TAP and connection (21) to 20 to 200 ccm leakage connection (20) in altitude chamber.

CAUTION

Vacuum pump vent (54) must be opened one to two turns when operating vacuum pump. Refer to appropriate ground support equipment manual.

b. Turn vacuum pump on.

c. Turn PRESS. SELECTOR valve (D) to the H_2O position.

d. Open OVERBOARD toggle (T).

e. Ensure LEAKAGE SELECTOR valve (F) is in HIGH RANGE position.

f. Open INWARD REF. TAP (P) until 9.0 inH_2O suction is indicated on PRESS./SUCTION manometer (4). Any leakage will be displayed on leakage rotameter (6). The maximum allowable indicated leakage is 200 ccm. Record indicated leakage on the Performance Test Sheet.

g. Close INWARD REF. TAP (P) and OVERBOARD toggle (T). Disconnect line from 20 to 200 ccm leakage connection (20) and REF. TAP and connection (21) in altitude chamber. Turn vacuum pump OFF and disconnect piezometer (26) from regulator outlet.

h. If excessive leakage is indicated, locate probable cause, using troubleshooting table 13-3.

Table 13-3. Troubleshooting (Inward Leakage Test)

Trouble	Probable Cause	Remedy
Note: Unless otherwise noted, index numbers in parentheses refer to figure 13-6.		
Leakage through aneroid and air shutoff valve assembly.	Air shutoff sleeve (64) damaged.	Replace air shutoff sleeve (64).
	Gasket (73) damaged.	Replace damaged gasket (73).
Leakage at outlet.	Packing (94) damaged.	Replace damaged packing (94).
	Loose screws (94).	Tighten screws (91).
	Faulty assembly.	Replace seat (86) and valve (88).
Notes: 1. Probable causes in Table 13-7. Troubleshooting (Outward Leakage Test) and Table 13-8. Troubleshooting (Relief Valve Test) could also cause excessive inward leakage.		

13-63. OUTLET LEAKAGE TEST. To perform Outlet Leakage Test, proceed as follows.

Materials Required

Quantity	Description	Reference Number
As Required	Compound, Leak Detection, Type 1	MIL-L-25567
As Required	Nitrogen, Oil-free, Water Pumped, Type I, Class I, Grade B	Fed Spec BB-N-411 NIIN 00-985-7275

Support Equipment Required

Quantity	Description	Reference Number
1	Oxygen Systems Components Test Stand	1172AS100 or 1316AS100

1. Place regulator supply valve control toggle in ON position.

2. Place diluter control toggle in 100% OXYGEN position.

3. Ensure regulator emergency pressure control lever is in NORMAL position.

4. Connect regulator inlet to N_2 INPUT connection (18) in the altitude chamber.

5. Using LOW PRESSURE REGULATOR (N), apply 150 psig to the regulator inlet.

6. Slowly turn INLET PRESS. ON/OFF valve (L) to ON.

7. Activate emergency pressure control toggle to allow flow through the regulator. Return toggle to NORMAL position.

8. Draw a film of leak detection compound across the regulator outlet. Film shall not advance more than 1/2 inch in ten seconds. If film advance is more than allowable, repeat test three or four times. (Distention could be caused by difference in temperature between inside and outside of regulator.) Record reading on Performance Test Sheet.

9. If film advance continues to be more than allowed, locate probable cause using troubleshooting table 13-4.

10. Relieve pressure on test stand to 50 psig by backing out on LOW PRESSURE REGULATOR (N) and using SYSTEM BLEED VALVE (S).

Table 13-4. Troubleshooting (Outlet Leakage Test)

Trouble	Probable Cause	Remedy
Note: Unless otherwise noted, index numbers in parentheses refer to figure 13-6.		
Demand valve assembly leaking.	Damaged demand valve bushing (130 or 141).	Replace defective part(s).
	Damaged packings (126, 127, 131, 137 or 139).	
	Damaged seat (125 or 138).	
	Damaged stem assembly (129 or 140).	
Demand valve loading.	Manual safety pressure assembly (44) out of adjustment.	Adjust screw (4, figure 13-8) clockwise.
Seat and matched valve assembly (83 and 85) leaking.	Out of adjustment.	Adjust aneroid assembly (75) farther away from assembly.
	Faulty assembly.	Replace seat (83) and valve (85).

13-64. OXYGEN INLET VALVE LEAKAGE TEST. To perform the Oxygen Inlet Valve Leakage Test, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Nitrogen, Oil-free, Water Pumped, Type I, Class I, Grade B	Fed Spec BB-N-411 NIIN 00-985-7275

Support Equipment Required

Quantity	Description	Reference Number
1	Oxygen Systems Components Test Stand	1172AS100 or 1316AS100

1. Place regulator supply valve control toggle in OFF position.

2. Place emergency control toggle in EMERGENCY position.

3. Using HIGH PRESS. REGULATOR (Q), apply 500 psig to inlet of regulator.

4. Draw a film of leak detection compound across the regulator outlet.

5. There is no allowable leakage. Record reading on Performance Test Sheet. If leakage is noted locate probable cause using troubleshooting table 13-5.

13-65. OVERALL LEAKAGE TEST. To perform the Overall Leakage Test, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Nitrogen, Oil-free, Water Pumped, Type I, Class I, Grade B	Fed Spec BB-N-411 NIIN 00-985-7275

Support Equipment Required

Quantity	Description	Reference Number
1	Oxygen Systems Components Test Stand	1172AS100 or 1316AS100

NOTE

Perform this test with diluter toggle in 100% OXYGEN position, and then in the NORMAL OXYGEN position.

1. Place regulator oxygen inlet valve control toggle in ON position, Place emergency pressure control toggle in NORMAL position.

Table 13-5. Troubleshooting (Oxygen Inlet Valve Leakage Test)

Trouble	Probable Cause	Remedy
Note: Unless otherwise noted, index numbers in parentheses refer to figure 13-10.		
Inlet valve (52, figure 13-6) leaking.	Valve stem (21) leaking.	Replace valve stem (21).
	Seat insert (22) leaking.	Replace seat insert (22).
	Valve (18) leaking.	Replace valve (18).
	Seat (19) leaking.	Replace seat (19).
	Out of adjustment.	Adjust in accordance with paragraph 13-101.
	Cracked inlet body (23).	Replace body (23).

2. Ensure 500 psig pressure is still applied to regulator inlet.

3. Turn INLET PRESS. ON/OFF valve (L) to OFF. Leave regulator oxygen inlet valve toggle in ON position.

4. Leakage will be indicated on the regulator pressure gage. Allowable leakage shall not exceed 60 psig over a two-minute period. Record reading on Performance Test Sheet.

5. If leakage is excessive, locate probable cause using troubleshooting chart, table 13-6.

6. Turn HIGH PRESS. REGULATOR (Q) to VENT.

7. Bleed regulator by placing emergency pressure control toggle in EMERGENCY position, return toggle to NORMAL.

8. Bleed test stand using SYSTEM BLEED (S).

13-66. REGULATOR PRESSURE GAGE SCALE AND ERROR TEST. To perform the Regulator Pressure Gage Scale and Error Test, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Nitrogen, Oil-free, Water Pumped, Type I, Class I, Grade B	Fed Spec BB-N-411 NIIN 00-985-7275

Support Equipment Required

Quantity	Description	Reference Number
1	Oxygen Systems Components Test Stand	1172AS100 or 1316AS100

1. Turn INLET PRESS. ON/OFF valve (L) to ON.

CAUTION

LOW PRESS. REGULATOR (N) can only be used when applying pressures of below gage guard setting (165 to 175 psig) to an item under test. For pressures above gage guard setting, HIGH PRESS. REGULATOR (Q) must be used.

NOTE

Regulator pressure gage readings must be recorded twice, once before and once after tapping regulator pressure gage.

2. Using LOW PRESS. REGULATOR (N), slowly increase pressure to each test pressure 50 and 100 psig as specified in figure 13-3.

3. Check tolerance by comparing regulator pressure gage with test stand LOW/HIGH pressure gages. Record reading on Performance Test Sheet.

4. Back out on LOW PRESS. REGULATOR (N) until 70 psig is indicated on REGULATED LOW PRESSURE GAGE (11).

Table 13-6. Troubleshooting (Overall Leakage Test)

Trouble	Probable Cause	Remedy
Note: Unless otherwise noted, index numbers in parentheses refer to figure 13-6.		
Excessive leakage.	Pressure gage screws (21) loose.	Tighten screws.
	Faulty pressure gage or pressure gage tubing.	Replace pressure gage assembly (1, figure 13-7).
	Inlet valve housing screws (50) loose.	Tighten screws.
	Damaged packing (22).	Replace packing (22).
	Manual safety pressure assembly (44) loading diaphragm.	Adjust screw (4, figure 13-8) clockwise as required.

5. Using HIGH PRESS. REGULATOR (Q), apply 500 psig. Record reading on Performance Test Sheet.

6. Turn INLET PRESS. ON/OFF valve (L) to OFF.

7. Turn HIGH PRESS. REGULATOR (Q) to VENT.

8. Bleed test stand to 70 psig using SYSTEM BLEED (S). Bleed regulator by placing emergency pressure control toggle in EMERGENCY position, return toggle to NORMAL.

13-67. OUTWARD LEAKAGE TEST. To perform Outward Leakage Test, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Nitrogen, Oil-free, Water Pumped, Type I, Class I, Grade B	Fed Spec BB-N-411 NIIN 00-985-7275

Support Equipment Required

Quantity	Description	Reference Number
1	Oxygen Systems Components Test Stand	1172AS100 or 1316AS100

NOTE

During this test the relief valve shall not be covered. The allowable leakage through this valve at 17 inH_2O is included in the maximum allowable leakage, 0.12 lpm (120 ccm).

1. Place regulator inlet valve control toggle in ON position, and diluter control toggle in NORMAL OXYGEN position. Cap regulator inlet valve.

2. Connect regulator outlet to piezometer (26) in altitude chamber.

3. Connect a line from LOW PRESS. connection (19) to REF. TAP and connection (21) in altitude chamber.

4. Ensure INLET PRESS. ON/OFF valve (L) is in the OFF position.

5. Adjust LOW PRESS. REGULATOR (N), until 70 psig is indicated on REGULATED LOW PRESS. gage (11).

6. Turn PRESS. SELECTOR valve (D) to H_2O position, and slowly open LEAKAGE CONTROL valve (E) until 17 inH_2O is indicated on PRESS/SUCTION manometer (4).

NOTE

Maintain 17 inH_2O with LEAKAGE CONTROL valve (E) throughout the test.

7. If no leakage is indicated on HIGH RANGE LEAKAGE rotameter (8), turn LEAKAGE SELECTOR valve (F) to low range position, and check for indication of leakage on LOW RANGE LEAKAGE rotameter (7). Allowable leakage is 0.12 lpm (120 ccm).

8. Switch LEAKAGE SELECTOR valve (F) to HIGH position, and close LEAKAGE CONTROL valve (E).

9. Repeat steps 6, 7, and 8 with diluter control lever 100% OXYGEN position.

10. If leakage is excessive, locate probable cause using troubleshooting table 13-7.

Table 13-7. Troubleshooting (Outward Leakage Test)

Trouble	Probable Cause	Remedy
Note: Unless otherwise noted, index numbers in parentheses refer to figure 13-6.		
Plug (99) leaking.	Faulty preformed packing (97).	Replace packing (97).
Outlet leaking.	Loose screws (88).	Tighten screws (88).
	Damaged packing (91).	Replace packing (91).
Inlet valve (52) leaking.	Loose screws (50).	Tighten screws (50).
	Damaged packing (55).	Replace packing (55).
Diaphragm cover (108) leaking.	Loose screws (106).	Tighten screws (106).
	Ruptured diaphragm (108).	Replace diaphragm (108).
Diaphragm (115) leaking.	Improper installation or assembly.	Reassemble diaphragm (figure 13-14) or replace diaphragm assembly (112).
Flow indicator leaking.	Damaged packing (30).	Replace faulty parts.
	Damaged gasket (16) if installed.	
	Bent washer (32).	
	Ruptured diaphragm (36).	
Manual safety pressure assembly leaking.	Damaged packing (45).	
	Damaged washer (7, figure 13-8).	
Check valve adapter and spring assembly leaking.	Damaged check valve disc or adapter (2 or 1, figure 13-11).	
	Damaged gaskets (72 or 74).	
Test port assemblies leaking.	Damaged items 23 through 28.	
	Damaged packing (12).	
	Damaged tubes (23, 46, and 47).	
	Damaged cap assembly (11).	

13-68. RELIEF VALVE TEST. To perform the Relief Valve Test, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Nitrogen, Oil-free, Water Pumped, Type I, Class I, Grade B	Fed Spec BB-N-411 NIIN 00-985-7275

Support Equipment Required

Quantity	Description	Reference Number
1	Adapter Assembly	NAVAIR Dwg No. 1172AS136
1	Oxygen Systems Components Test Stand	1172AS100 or 1316AS100

1. Turn PRESS. SELECTOR valve (D) to Hg position, and place FLOW SELECTOR valve (M) in SUIT SIMULATOR position.

2. Place diluter control lever is in 100% OXYGEN position and oxygen supply toggle on regulator to the OFF position.

3. Using VENT PRESS. valve (H), slowly apply 3 inches of mercury (inHg) to the regulator outlet. Regulator relief valve shall be venting at least 45 lpm as indicated on VENT FLOW manometer (3). Record reading on Performance Test Sheet.

4. Close VENT PRESS. valve (H), open VENT AMBIENT valve (I), place FLOW SELECTOR valve (M) in REGULATOR position, and close valve (I).

5. Slowly move PRESS. SELECTOR valve (D) to H_2O position.

6. Turn LEAKAGE SELECTOR valve (F) to LOW range position.

7. Open LEAKAGE CONTROL valve (E). Apply and maintain 17 inH_2O to regulator outlet. Maximum allowable leakage is 0.12 lpm (120 ccm). Record reading on Performance Test Sheet.

8. Close LEAKAGE CONTROL valve (E).

9. Bleed pressure on test stand to 50 psig using LOW PRESS. REGULATOR (N) and SYSTEM BLEED valve (S).

10. Turn LEAKAGE SELECTOR valve (F) to HIGH range position.

11. If excessive leakage is found or if relief valve fails to vent, locate probable cause using troubleshooting table 13-8.

13-69. FLOW SUCTION TEST. To perform the Flow Suction Test, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Nitrogen, Oil-free, Water Pumped, Type I, Class I, Grade B	Fed Spec BB-N-411 NIIN 00-985-7275

Support Equipment Required

Quantity	Description	Reference Number
1	Oxygen Systems Components Test Stand	1172AS100 or 1316AS100

Table 13-8. Troubleshooting (Relief Valve Test)

Trouble	Probable Cause	Remedy
Note: Unless otherwise noted, index numbers in parentheses refer to figure 13-13.		
Leakage in excess of 0.01 lpm.	Relief valve (figure 13-13) out of adjustment.	Adjust by turning nut (1) clockwise.
	Weak spring (3).	Replace spring (3).
Relief valve fails to vent 45 lpm.	Spring (3) tension too strong.	Replace spring (3).
	Nut (1) out of adjustment.	Turn nut (1) counterclockwise.
	Sticking valve disc (6).	Replace disc (6).

1. Disconnect hose from LOW PRESS. connection (19) to REF. TAP and connection (21) in altitude chamber.

2. Turn vacuum pump ON.

3. Ensure PRESS. SELECTOR valve (D) is in the H_2O position.

4. Ensure INLET PRESS. ON/OFF valve (L) is ON.

5. Place regulator inlet valve control toggle in ON position.

6. Using LOW PRESS. REGULATOR (N), set the inlet pressure at each inlet pressure specified on Performance Test Sheet.

NOTE

Readings must be recorded with the regulator diluter toggle in both NORMAL and 100% OXYGEN positions for each outlet flow specified on Performance Test Sheet.

Ensure inlet pressure is maintained when applying outlet flows.

7. Using OUTPUT valve (C), set flows specified in Performance Test Sheet on OUTPUT manometer (1). Suction values will be displayed on PRESS./SUCTION manometer (4). Record readings on Performance Test Sheet.

NOTE

With no suction on regulator (OUTPUT valve (C) closed), maximum flow through regulator shall not exceed 0.01 lpm. This will cause a slight rise in PRESS./SUCTION manometer (4).

8. Close OUTPUT valve (C).

9. If regulator fails the Flow Suction Test, locate probable cause using troubleshooting table 13-9.

13-70. OXYGEN RATIO TEST. To perform the Oxygen Ratio Test, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Nitrogen, Oil-free, Water Pumped, Type I, Class I, Grade B	Fed Spec BB-N-411 NIIN 00-985-7275

Support Equipment Required

Quantity	Description	Reference Number
1	Oxygen Systems Components Test Stand	1172AS100 or 1316AS100

Table 13-9. Troubleshooting (Flow Suction Test)

Trouble	Probable Cause	Remedy
Note: Unless otherwise noted, index numbers in parentheses refer to figure 13-6.		
Flow indicator leaking (high suction).	Damaged blinker assembly (34).	Replace blinker assembly (34).
	Damaged packing (30), gasket (16, if installed), washer (32), or diaphragm (36).	Replace defective part(s).
Injector assembly (high or low suction).	Stiff injector nozzle (94).	Replace injector nozzle (94).
Inlet valve assembly.	(High suction) clogged filter (15, figure 13-10).	Replace filter (15).
	(High or low suction) inlet valve assembly (49) out of adjustment.	Adjust inlet valve assembly in accordance with paragraph 13-101.
Low flow suction 100% mode.	Demand valve seat (128 or 141) ports not aligned with regulator housing ports from inlet valve assembly (49).	Align seat ports with regulator housing ports.

1. Ensure regulator inlet valve control toggle is in ON position, and diluter control toggle is in NORMAL OXYGEN position.

2. Using LOW PRESS. REGULATOR (N) apply 50 psig to regulator inlet.

CAUTION

Maintain 3.0 inH_2O on OUTPUT FLOW manometer (1) with OUTPUT valve (C) while ascending to altitude.

Slowly open VACUUM CONTROL valve (B) and observe PRESS./SUCTION manometer (4). If rapid increase in pressure is indicated, close down on VACUUM CONTROL valve (B) until pressure stabilizes. This rapid increase of pressure shown on PRESS./SUCTION manometer (4) is caused by too fast a rate of climb in the altitude chamber.

3. Using VACUUM CONTROL valve (B), ascend to first test altitude shown on Performance Test Sheet.

4. Set output flows specified in Performance Test Sheet with OUTPUT valve (C) and stabilize altitude with INPUT valve (A).

5. Read INPUT FLOW manometer (2), and record readings on Performance Test Sheet.

6. Continue the test for each specified altitude and outlet flow shown on Performance Test Sheet.

7. Close OUTPUT valve (C) and INPUT valve (A). Descend to 30,000 feet using CHAMBER BLEED valve (K).

NOTE

If indicated input flows are not within limits, an Aneroid Closure Test must be performed.

8. If Oxygen Ratio Test was satisfactory, proceed to Safety Pressure and Pressure Breathing Test (paragraph 13-72).

13-71. ANEROID CLOSURE TEST. To perform the Aneroid Closure Test, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Nitrogen, Oil-free, Water Pumped, Type I, Class I, Grade B	Fed Spec BB-N-411 NIIN 00-985-7275

Support Equipment Required

Quantity	Description	Reference Number
1	Oxygen Systems Components Test Stand	1172AS100 or 1316AS100

NOTE

Aneroid Closure Test is performed only if regulator fails Oxygen Ratio Test.

1. Descend to 25,000 feet using CHAMBER BLEED valve (K).

2. Ensure inlet pressure is set at 50 psig.

3. Set up a flow of 3.0 inH_2O on OUTPUT FLOW manometer (1) with OUTPUT valve (C).

4. Aneroid shall close between 28,000 and 32,000 feet, as indicated by no further advance in altitude on LOW RANGE ALTM. (13).

5. Close OUTPUT valve (C) and descend to sea level using CHAMBER BLEED valve (K).

6. If regulator fails Aneroid Closure Test and/or Oxygen Ratio Test, locate probable cause using troubleshooting table 13-10.

13-72. SAFETY PRESSURE AND PRESSURE BREATHING TEST. To perform the Safety Pressure and Pressure Breathing Test, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Nitrogen, Oil-free, Water Pumped, Type I, Class I, Grade B	Fed Spec BB-N-411 NIIN 00-985-7275

Table 13-10. Troubleshooting (Oxygen Ratio/Aneroid Closure Test)

Trouble	Probable Cause	Remedy
Note: Unless otherwise noted, index numbers in parentheses refer to figure 13-6.		
Incorrect oxygen ratio at 10,000 and 15,000 feet (low air).	Excessive check valve spring (3, figure 13-11).	Turn adjusting screw retainer (5, figure 13-11) counterclockwise.
	Leaking injector sleeve (93).	Tighten mixing tube (92) or replace packing (91).
	Incorrectly positioned injector sleeve (93).	Align port in injector sleeve with port in regulator.
High air at 10,000 and 15,000 feet.	Insufficient check valve spring (3, figure 13-11).	Turn adjusting retainer (5, figure 13-11) clockwise or replace spring.
Low air at 20,000 feet.	Distance to short between throttling plate (64) and aneroid housing (69).	Install shorter shouldering screw (63).
High air at 20,000 feet.	Distance to great between throttling plate (64) and aneroid housing (69).	Install longer shouldering screw (66).
Incorrect oxygen ratio at 25,000 to 30,000 feet.	Aneroid (68) incorrectly adjusted.	Too high turn aneroid (68) counter-clockwise. Too low turn aneroid (68) clockwise.

Support Equipment Required

Quantity	Description	Reference Number
1	Oxygen Systems Components Test Stand	1172AS100 or 1316AS100

1. Ensure inlet pressure is set at 50 psig.

NOTE

If chamber altitude is not at 30,000 feet adjust altitude, use VACUUM CONTROL valve (B) to increase altitude or CHAMBER BLEED valve (K) to decrease altitude.

2. Using OUTPUT valve (C), draw flows of 0 and 85 lpm through the regulator. Delivery pressure must be within limits shown on Regulator Performance Test Sheet. Record reading on Performance Test Sheet.

CAUTION

Maintain 3.0 inH_2O on OUTPUT FLOW manometer (1) with OUTPUT valve (C) while ascending to altitude.

NOTE

Readings for 0 and 85 lpm must also be recorded at each test altitude

3. Repeat step 2 for each altitude shown on Performance Test Sheet.

4. Close OUTPUT valve (C) and descend to sea level using CHAMBER BLEED valve (K).

5. If safety pressure/pressure breathing flows are not within limits, locate probable cause using troubleshooting table 13-11.

13-73. BLINKER ASSEMBLY TEST. To perform the Blinker Assembly Test, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Nitrogen, Oil-free, Water Pumped, Type I, Class I, Grade B	Fed Spec BB-N-411 NIIN 00-985-7275

Table 13-11. Troubleshooting (Safety Pressure/Pressure Breathing Test)

Trouble	Probable Cause	Remedy
Note: Unless otherwise noted, index numbers in parentheses refer to figure 13-6.		
Low safety pressure/pressure breathing.	Pressure breathing aneroid (75) or setscrew (3, figure 13-12) too far from valve control diaphragm (81).	Adjust aneroid or setscrew closer to valve control diaphragm.
High safety pressure/pressure breathing.	Pressure breathing aneroid (75) or pressure adjusting screw (3, figure 13-12) too close to valve control diaphragm (81).	Adjust aneroid or setscrew farther from valve control diaphragm.
Safety pressure creeps at zero flow.	Seat (83) and matched valve assembly (85) leaking.	Replace seat (83) and matched valve assembly (85).
Safety pressure drops below minimum at higher flows.	Tube and ring assembly (109) leaking or improperly installed.	Replace preformed packing (111) or install tube and ring (109) correctly.
	Inner diaphragm (112) or outer diaphragm (108) damaged or improperly installed.	Replace or install correctly.

Support Equipment Required

Quantity	Description	Reference Number
1	Adapter Assembly	NAVAIR Dwg No. 1172AS136
1	Oxygen Systems Components Test Stand	1172AS100 or 1316AS100

1. Ensure diluter control toggle is in NORMAL OXYGEN POSITION.

2. Using LOW PRESS. REGULATOR (N), apply 50 psig to regulator inlet.

3. Using OUTPUT valve (C), draw a flow of 20 lpm through regulator. Blinker must open fully. Record reading on Performance Test Sheet.

CAUTION

Maintain 3.0 inH_2O on OUTPUT FLOW manometer (1) with OUTPUT valve (C) while ascending to altitude.

4. Reduce Output flow to 8 lpm and place diluter control toggle in 100% OXYGEN position. Blinker must remain fully open. Record reading on Performance Test Sheet.

5. Close OUTPUT valve (C). Blinker should close immediately. Record reading on Performance Test Sheet.

6. Close altitude chamber door.

7. Using VACUUM CONTROL valve (B), ascend in altitude until 17.0 inH_2O is indicated on PRESS./SUCTION manometer (4).

8. Open OUTPUT valve (C) and draw a flow of 12 lpm through the regulator. The blinker should be fully open. Record reading on Performance Test Sheet. Close OUTPUT valve (C). Blinker should close immediately. Record reading on Performance Test Sheet.

9. Descend to sea level using CHAMBER BLEED valve (K).

10. If malfunctions are noted, locate probable cause using troubleshooting table 13-12.

13-74. EMERGENCY PRESSURE TEST. To perform the Emergency Pressure Test, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Nitrogen, Oil-free, Water Pumped, Type I, Class I, Grade B	Fed Spec BB-N-411 NIIN 00-985-7275

Table 13-12. Troubleshooting (Blinker Assembly Test)

Trouble	Probable Cause	Remedy
Note: Unless otherwise noted, index numbers in parentheses refer to figure 13-6.		
Flow indicator fails to open or close.	Ruptured diaphragm (36).	Replace diaphragm (36).
	Bent or distorted blinker assembly (34).	Replace blinker assembly (34).

Support Equipment Required

Quantity	Description	Reference Number
1	Oxygen Systems Components Test Stand	1172AS100 or 1316AS100

1. Ensure the diluter control toggle is in NORMAL OXYGEN position.

2. Using LOW PRESS. REGULATOR (N), apply 50 psig to regulator inlet.

3. Open OUTPUT valve (C) and draw a flow of 10 lpm through the regulator.

4. Place emergency control toggle in EMERGENCY position. Pressure indicated on PRESS./SUCTION manometer (4) shall read 2.0 to 4.0 inH_2O. Record reading on Performance Test Sheet.

NOTE

Ensure inlet pressure is maintained when performing step 5.

5. Adjust OUTPUT valve (C) to draw 80 lpm flow through regulator.

6. Place diluter control toggle in 100% OXYGEN position. Pressure at outlet of regulator, as indicated on PRESS./SUCTION manometer (4), shall be no less than 1.0 inH_2O. Record reading on Performance Test Sheet.

7. Adjust output to a 10 lpm flow. Hold emergency pressure control toggle in TEST MASK position. Output flow, as indicated PRESS./SUCTION manometer (4), shall be 6.0 to 16.0 inH_2O. Record reading on Performance Test Sheet.

8. If emergency pressure flows are not within tolerance, locate probable cause using troubleshooting table 13-13.

9. Close N_2 supply cylinder valve. Using LOW PRESS. REGULATOR (N) and SYSTEM BLEED valve (S), relieve all pressure from test stand. Turn INLET PRESS. ON/OFF valve OFF and remove regulator from test stand.

13-75. REGULATOR OXYGEN PURGE. After completion of all tests, the regulator shall be purged with oxygen as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Aviator's Breathing Oxygen, Type I	MIL-O-27210

WARNING

Do not use oxygen test stand to regulate the oxygen purge pressure.

1. Connect regulator inlet to a regulated source of aviator's breathing oxygen.

2. Apply 500 psig to regulator inlet.

3. Position diluter control toggle in the 100% position, supply toggle in the ON position and emergency pressure control toggle in the EMERGENCY position, allow oxygen to flow 1 to 3 minutes.

4. Shut off oxygen source and disconnect regulator.

Table 13-13. Troubleshooting (Emergency Pressure Test)

Trouble	Probable Cause	Remedy
Note: Unless otherwise noted, index numbers in parentheses refer to figure 13-8.		
High or low emergency pressure.	Demand valve stem assembly (142, or seat 138, figure 13-6) bent or sticking.	Replace demand valve stem (142) or seat (138).
Low emergency pressure.	Spring (2) tension weak.	Increase spring tension with adjusting screw (1).
High emergency pressure.	Spring (2) tension weak.	Decrease spring tension with adjusting screw (1).
Test mask pressure low.	Cap screw (4) adjustment to short.	Increase length of cap screw (4).
Test mask pressure high.	Cap screw (4) adjustment to long.	Decrease length of cap screw (4).
Low emergency pressure at 80 lpm flow.	Faulty injector nozzle (94, figure 13-6).	Replace injector nozzle (94).
Low emergency pressure at 80 lpm flow.	Port openings on demand valve seat (125 or 138, figure 13-6) are not aligned with ports in regulator housing (132).	Readjust demand valve assembly in accordance with paragraph 13-107.

NOTE

All equipment forwarded from the Organizational Level maintenance to Intermediate and/or Depot Level maintenance shall be accompanied by an Aircrew Systems Record (OPNAV 4790/138). The test stand operator and CDI shall sign the Performance Test Sheet, and the original or a copy shall be forwarded to the organizational custodian. Upon completion of the Bench Test and/or Calendar Inspection, the organizational custodian shall retain the Aircrew Systems Record, Performance Test Sheet, and VIDS/MAF.

13-76. DISASSEMBLY.

13-77. Disassemble the oxygen regulator using index numbers assigned to figure 13-6, unless otherwise noted. Disassemble the oxygen regulator as follows:

CAUTION

All disassembly, inspection, repair, and assembly must be done on benches having good lighting and in an area provided with air conditioning or air filtering. Walls, floor, and ceiling should have a smooth finish, and be painted with a non-chalking paint which can be kept clean and dust free. It is desirable to keep all parts for each individual regulator separated. Make careful note of the location and quantity of all shims, spacers, and packings. Plastic partitioned boxes with covers or similar storage facilities should be used to keep parts segregated and protected from dirt and moisture. Plastic bags are also useful for storing subassemblies and component parts after cleaning and inspection until ready for assembly.

NOTE

Special tools shall be requisitioned directly from manufacturer (99251), or obtain commercial equivalents.

13-78. PLASTIC LIGHT PLATE. To remove the Plastic Light Plate, proceed as follows:

1. Remove lamp holder (4) and grommet (5). Remove bulb (1) from lamp holder (4).

2. Remove screw (9), washer (10) and screws (14) from light plate (13).

3. Remove cap (11) and attaching parts from fitting (24).

4. Remove light plate (13) from plate assembly (19).

13-79. GAGE AND LIGHT MOUNTING PLATE ASSEMBLY. To remove the Gage and Light Mounting Plate Assembly, proceed as follows:

Support Equipment Required

Quantity	Description	Reference Number
1	Pliers, Special, Retaining Ring	31TA10528 (CAGE 99251) NIIN 01-096-9701

1. Remove gasket (15). (Remove gasket (16) and cover plate (17) if installed.

2. Remove retaining ring (18) from test port (48).

3. Remove screws (21) which attach gage assembly (1, figure 13-7) to inlet valve assembly (49). Remove screws (20).

CAUTION

When removing tubes, use tweezers or a common hand tool to lift tube ends from housing to avoid barb damage from pulling on tubes.

4. Disconnect tube (23) from barb on air inlet housing assembly (69).

CAUTION

Take care not to damage gauge tubing (1, figure 13-7) or wiring when removing gage and light mounting plate assembly (19).

5. Remove gage and light mounting plate assembly (19).

6. Remove packing (22) from inlet valve assembly (49).

NOTE

Do not disassemble check valve assembly (24) and (28) and attaching parts from gage and light mounting plate unless damaged. If disassembly is required proceed with steps 7 and 8.

7. Remove check valve fitting (24) from check valve guide (28). Remove check valve guide (28) and attaching parts (25 through 27) from light mounting plate (19).

8. Reassemble check valve guide (28) and attaching parts (25 through 27) and install check valve fitting (24) onto check valve guide (28). Install cap assembly (11).

NOTE

Do not remove electrical wire (7, figure 13-7) unless damaged.

13-80. PRESSURE GAGE ASSEMBLY. To remove the Pressure Gage Assembly, proceed as follows:

NOTE

Remove pressure gage from light mounting plate only if damaged

Index numbers in this paragraph refer to figure 13-7 unless otherwise noted.

1. Remove two screws (4), screw (5), nuts (2), washers (3) and clamp (6). Use 1/4-inch open end wrench to hold nut.

2. Remove pressure gage (1).

13-81. BLINKER ASSEMBLY. To disassemble the Blinker Assembly, proceed as follows:

Support Equipment Required

Quantity	Description	Reference Number
1	Pliers, Special, Retaining Ring	31TA10528 (CAGE 99251) NIIN 01-096-9701

1. Remove window (29), and packing (30).

2. Using retaining ring pliers, remove retaining ring (31).

3. Carefully remove washer (32, if present), spacer (33), blinker assembly (34), sealing ring (35) and diaphragm (36).

13-82. MANUAL SAFETY PRESSURE ASSEMBLY. To disassemble the Manual Safety Pressure Assembly, proceed as follows:

Support Equipment Required

Quantity	Description	Reference Number
1	Punch, Relief Valve	31TA10523 (CAGE 99251)

1. Remove two screws (38), lock washers (39), and remove toggle assembly (37).

2. Remove push rod (42), top plate (40), shim (41), spring (43), pressure assembly (44), and packing (45) from regulator housing.

NOTE

Index numbers in steps 3 through 5 refer to figure 13-8.

3. To remove the actuating rod (8), hold manual safety housing (11) between fingers, and apply thumb pressure to adjusting screw (1) thereby applying pressure against manual safety guide (9) which compresses spring (10) and releases pressure from non-metallic washer (7). Using a 5/16-inch open end wrench, remove push rod assembly (3).

4. Remove manual safety guide (9), helical compression spring (10), adjusting screw (1), helical compression spring (2), and actuating rod (8).

5. Using a 3/16-inch open end wrench, remove hex nut (5) and cap screw (4) from push rod (6).

13-83. TEST PORT, INLET VALVE, AIR INLET HOUSING, AND CHECK VALVE ASSEMBLIES. To disassemble the Test Port, Inlet Valve, Air Inlet Housing, and Check Valve Assemblies, proceed as follows:

Support Equipment Required

Quantity	Description	Reference Number
1	Pliers, Special, Retaining Ring	31TA10528 (CAGE 99251) NIIN 01-096-9701

NOTE

When removing tube, use tweezers or a common hand tool to lift tube ends from housing to avoid barb damage from pulling on tubes.

1. Disconnect tube (46) from barb on aneroid assembly (75). Disconnect tube (47) from barb on air inlet housing assembly (69). Remove test port assembly (48).

2. Turn supply toggle on and remove two setscrews (53) from cam (52). Remove three screws (50) and washers (54). Remove inlet valve assembly (49) and air inlet housing assembly (69) from regulator. Slide shaft of inlet valve assembly (49) from cam (52), toggle (54), and pivot block (60). Remove cam (55), toggle (57), and packing (58).

NOTE

Index numbers for disassembly of the inlet valve assembly, steps 3 through 9 refer to figure 13-10.

3. Turn inlet supply toggle to OFF position. Remove two screws (2) and remove toggle cap (1).

4. Remove cam follower (5), shims (6) if present. (Regulator P/N 29270 Series only.) Remove piston assembly (7) and packing (13).

5. Use special retaining ring pliers to remove retaining ring (14) from inlet valve body (23).

6. (Regulator P/N 29270 Series only.) Remove filter (15), sleeve (16), spring (17), valve (18), seat (19), and packing (20).

7. (Regulator P/N 3260011-0101 and 3260011-0701 only.) Remove filter (15), sleeve (16), spring (17), valve stem (21), insert (22), and packing (20). Remove piston assembly (7) and packing (13).

8. If required, disassemble toggle assembly as follows: Remove pin (4) and separate toggle (3) from toggle cap (1).

9. If required disassemble piston assembly (7) as follows: Remove screw (8), washer (9), helical compression spring (10), shim (24) (regulator P/N 3260011-0101 and 3260011-0701 only), and push rod (11) from piston (12).

10. Remove check valve assembly (73), tube (71), gasket (72), and gasket (74) from regulator housing (132).

NOTE

Index numbers in step 11 disassembly of check valve adapter and spring assembly, refer to figure 13-11.

Use extreme care when handling check valve disc (2) to avoid scratching or marring surface.

11. Carefully spread prongs of retainer assembly (5). Remove check valve adapter (1), check valve disc (2), spring (3), and spring adapter assembly (4).

12. Remove ring (56), pivot block (57), cap (58), washer (59) if present, spring (60), sleeve (61), and spring (62).

CAUTION

Use extreme care when handling throttling plate (64). Plate has very polished, lapped surface. Oil from skin, nicks, or scratches can damage plate.

13. Remove screw (63), throttling plate (64), and washer (65) from aneroid assembly (68).

14. Remove nut (66), screen (67), and gasket (70). Remove aneroid assembly (68) from air inlet housing assembly (69).

NOTE

Do not disassemble the test port assembly (48) unless damaged. Refer to figure 13-9 if disassembly is required and proceed to step 15.

15. Remove two screws (1), cover assembly (2), and check valve (3) from fitting assembly (4).

13-84. PRESSURE BREATHING ANEROID ASSEMBLY. To disassemble the Pressure Breathing Aneroid Assembly, proceed as follows:

Support Equipment Required

Quantity	Description	Reference Number
1	Pliers, Special, Retaining Ring	31TA10528 (CAGE 99251) NIIN 01-096-9701

1. Remove three screws (79). Remove aneroid assembly (75) push rod (77), and diaphragm (81).

2. Use retaining ring pliers to remove retaining ring (82). Remove valve seat (83), packing (84), valve (85) and spring (86).

3. Remove three lowest positioned screws (76) that secure cover (78) to aneroid assembly (75). Remove packing (80). Do not loosen or remove the three remaining screws (76) from aneroid assembly (75) they will be used for initial positioning during assembly.

NOTE

Disassemble the aneroid assembly (75) in step 4 only if required, Index numbers refer to figure 13-12.

4. Disassemble aneroid housing assembly (5) as follows:

a. Remove ring (1), retainer (2), spring (4), and screw (3).

b. (Regulators P/N 29270-10A-A1, 3260011-0701 and 3260011-0101.) Remove baffle (7) and screen (8).

13-85. RELIEF VALVE ASSEMBLY. To disassemble the Relief Valve Assembly, proceed as follows:

Support Equipment Required

Quantity	Description	Reference Number
1	Pliers, Special, Retaining Ring	31TA10528 (CAGE 99251) NIIN 01-096-9701

1. Use retaining ring pliers, remove retaining ring (100), cover retaining washer (101), cover (102), relief valve assembly (103), and packing (104).

NOTE

Index numbers in step 2, refer to figure 13-13.

2. Remove nut (1), retainer (2), spring (3). Separate guide (4), gasket (5), and disc (6) from seat (7).

13-86. DIAPHRAGM ASSEMBLY. To disassemble the Diaphragm Assembly, proceed as follows:

1. Remove four screws (106), washers (107). Remove diaphragm cover (105), diaphragm (108), tube and ring assembly (109), and packing (111). Remove filter (110) only if damaged.

2. Remove diaphragm assembly (112) by carefully moving it up and away from the outlet side of the regulator.

NOTE

Index numbers in step 3, refer to figure 13-14.

3. Remove nut (1), plate (2), washer (3) if present, diaphragm (4), plate (5) and flange (6).

13-87. MAIN ASSEMBLY. To disassemble Main Assembly, proceed as follows:

Support Equipment Required

Quantity	Description	Reference Number
1	Pliers, Special, Retaining Ring	31TA10528 (CAGE 99251) NIIN 01-096-9701

1. Remove screw (98) and lock-o-seal (99) from regulator housing. Using retaining ring pliers, remove retaining ring (95). Remove plug (96) and packing (97) by pushing from inside regulator to outside with a blunt instrument.

2. (Regulator P/N 29270 Series only.) Using retaining ring pliers, remove retaining ring (123), washer (124) if present, valve seat (125), and packing (126). Remove packing (127), valve (128), bushing (130), packing (131), and stem assembly (129).

3. (Regulator P/N 3260011-0101 and 3260011-0701 only.) Use needle nose pliers to hold stem (129) through plug (96), while using jeweler's screwdriver inserted through hole that binding head screw (98) was removed and remove valve lever connector (144) from stem assembly (129).

NOTE

Index numbers in step 4 will be used for regulator part numbers 3260011-0101 and 3260011-0701 only.

4. Remove retaining ring (123), retainer (134), packing (135), stem assembly (136), packing (137), seat (138), packing (139), stem assembly (140), bushing (141), and packing (131).

13-88. LEVER AND BRACKET ASSEMBLIES. To disassemble the Lever and Bracket Assemblies, proceed as follows:

1. Remove screw (115), screw (116), and washer (117) that attach lever assembly (113) to regulator housing. Remove lever assembly (113), spring (122), and spring guide (121) through plug (96) opening.

2. Remove two screws (120) that attach lever and bracket assembly (118) to regulator housing. Remove lever and bracket assembly (118) from regulator housing. Remove setscrews (119) and (114) from lever assemblies only if damaged.

13-89. OUTLET, MIXING TUBE, AND INJECTOR ASSEMBLY. To disassemble the Outlet, Mixing Tube, and Injector Assembly, proceed as follows:

Support Equipment Required

Quantity	Description	Reference Number
1	Wrench, Spanner	QB70750-9 NIIN 00-302-6456

1. Remove screws (88), lockwashers (89), flat washers (90), and outlet (87). Remove preformed packing (91).

2. Using piloted spanner wrench, remove mixing tube (92).

3. Remove injector sleeve (93) and injector nozzle (94) from regulator housing (132).

13-90. CLEANING.

13-91. To clean the disassembled oxygen regulator body and components parts, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Bag, Plastic	MIL-B-117 (CAGE 81349)
As Required	Bottle, Polyethylene Squeeze	—
As Required	Nitrogen, Oil-free, Water Pumped, Type I, Class I, Grade B	Fed Spec BB-N-411 NIIN 00-985-7275

WARNING

Do not use oil, or any material containing oil, in conjunction with oxygen equipment. Oil, even in a minute quantity, coming in contact with oxygen can cause explosion or fire. Dust, lint, and fine metal particles are also dangerous.

1. Clean all metallic parts using procedures outlined in NAVAIR 13-1-6.4-1. Blow dry with oil-free nitrogen.

CAUTION

Do not attempt to clean any elastomer parts that have become contaminated with oil or grease. All such parts shall be replaced.

2. Prior to installation, wash all silicone rubber parts in distilled water and blow dry with oil-free nitrogen.

3. After cleaning all internal surfaces, they shall be examined for cleanliness. Should further contamination be found, re-clean the parts in accordance with step 1.

4. Cleaned parts shall be sealed in plastic bags for storage. Also, bag all complete assemblies that are not immediately returned to service.

13-92. INSPECTION OF DISASSEMBLED REGULATOR.

13-93. Inspect the disassembled regulator body and component parts in accordance with table 13-14. Ensure lamp retainer assembly (8, figure 13-7) is wired in accordance with figure 13-4.

Table 13-14. Inspection of Disassembled Regulator Components

Nomenclature	Figure and Index No.	Inspect For
Gage and Light Mounting Plate Assembly.	13-7	Cracks or other damage to plate or lamps.
		Check fasteners, spring, or cups for proper action.
Manual Safety Pressure Assembly.	13-6-44	Smooth operation (no sticking or binding).
Inlet Valve Assembly.	13-6-49	Scratches or excessive wear on sealing surfaces.
Aneroid and Air Shutoff Assembly.	13-6-69	Scratches or excessive wear on sealing surfaces.
Check Valve Adapter and Spring Assembly.	13-6-73	Scratches or excessive wear on sealing surfaces.
Relief Valve Assembly.	13-6-103	Scratches or excessive wear on sealing surfaces.
Diaphragm Assembly.	13-6-112	Pinholes, minute ruptures, discoloring, spotting, or other damage. Diaphragm rim for cuts or other damage on sealing surface.
Emergency Pressure Lever Assembly.	13-6-113	Disintegration of lead counterweight.
Aneroid Assembly.	13-6-75	Evenly spaced convolutions (no cocks or dents).
Lamp.	13-6-1	Burned out condition by applying +28 Vdc.
Tube and Pressure Gage Assembly.	13-7-1	Chips or breaks in glass. Tubing for kinks or blockage.
Wire Assembly.	13-7-7	Damaged insulation or loose solder joints.
Fasteners.	13-7-13	Excessive wear in slots.
Filter.	13-10-15	Clogging
Valve Stem.	13-10-21	Scratches, rings, or excessive wear.
Seat Insert.	13-10-22	Scratches, rings, or excessive wear.
Throttling Plate.	13-6-64	Smooth flat surfaces, entirely free of nicks or scratches.
Aneroid Assembly.	13-6-65	Evenly spaced convolutions (no cocks or dents).
Retainer Assembly.	13-11-5	Bent or deformed prongs.
Check Valve Disc.	13-11-2	Smooth flat surfaces, entirely free of nicks or scratches.
Adapter Assembly.	13-11-4	Marks or scratches.
Manual Safety Housing.	13-8-11	Nicks or scratches on seat surface.
Relief Valve Disc.	13-13-6	Bright surface, free of nicks and scratches on lapped and polished side of disc.
Relief Valve Seat.	13-13-7	Nicks, scratches, or excessive wear.

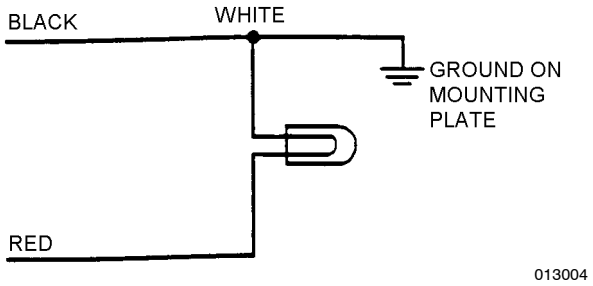


Figure 13-4. Wiring Diagram

13-94. REPAIR.

13-95. Unless otherwise specified, all parts found to be damaged or defective shall be replaced. Defects on white painted surfaces may be touched-up using lacquer (MIL-L-6805).

13-96. ASSEMBLY.

13-97. Assembly of Aircraft Panel Mounted Regulators is essentially the reverse of Disassembly. Tests are required on subassemblies as they are assembled into the regulator. Adjustment and calibration is also performed at time of assembly.

WARNING

Prior to use, inspect leak detection compound. Compound that is not clear and free from suspended material/sediment is considered contaminated and shall be disposed of. Compound exhibiting peculiar odors such as acetone or alcohol is considered contaminated and shall be disposed of.

CAUTION

Use extreme care in fitting precision parts to prevent damage. Ensure each component is dust and dirt free.

NOTE

All silicone-rubber parts shall be discarded, and replaced with new items at time of assembly. They shall be washed in accordance with paragraph 13-91, step 2 prior to installation.

13-98. Assembly is affected in two separate operations; assembly of components into subassemblies (mounting plate and controls assembly, injector assembly; etc.), and assembly of subassemblies into regulator housing. Assemble the oxygen regulator using index numbers assigned to figure 13-6, unless otherwise noted. Assemble the oxygen regulator as follows:

13-99. RELIEF VALVE ASSEMBLY. To assemble the Relief Valve Assembly, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Krytox 240AC Lubricant, Type II	(CAGE 81349) NIIN 00-961-8995

Support Equipment Required

Quantity	Description	Reference Number
1	Pliers, Special, Retaining Ring	31TA10528 (CAGE 99251) NIIN 01-096-9701

NOTE

Index numbers in steps 1 through 3, refer to figure 13-13.

1. Install gasket (5) onto guide (4). Install disc (6) onto guide (4) with unlapped surface against gasket (5).

2. Apply lubricant to bore of seat (7) and wipe off any excess with a lint free cloth.

3. Install guide (4) to seat (7). Install spring (3), retainer (2) and nut (1) onto guide (4). Nut should be tightened to approximately mid point of guide (4).

4. Install packing (104) and relief valve assembly (103) into regulator housing (132).

5. Install cover (102) and washer (101) into regulator housing (132). Use retaining ring pliers and install ring (100) into groove in regulator housing.

6. Final adjustment of relief valve will be made during post assembly Bench Test.

13-100. CHECK VALVE ASSEMBLY. To assemble the check valve assembly, proceed as follows:

CAUTION

Use extreme care when handling disc (2, figure 13-11). Do not scratch or mar.

NOTE

Prongs on retainer assembly (5, figure 13-11) must fit tight into the groove of the check valve adapter (1).

Index numbers in steps 1 and 2, refer to figure 13-11.

1. Screw spring adapter assembly (4) into retainer assembly (5) until threads are flush with the back of the retainer assembly.

2. Place spring (3) onto spring adapter assembly (4). Place disc (2) on top of spring. Attach check valve adapter (1) to retainer assembly (5). Ensure disc (2) has free movement along entire length of retainer assembly (5).

3. Install tube (71) into hole on check valve assembly (73) with angled end down and oriented toward the center. Install gasket (72) over tube (71) and check valve assembly (73).

4. Install gasket (74) and check valve assembly (73) into regulator housing (132) with tube (71) oriented toward emergency toggle assembly.

13-101. INLET VALVE ASSEMBLY. To assemble the Inlet Valve Assembly, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Compound, Leak Detection, Type 1	MIL-L-25567
As Required	Krytox 240AC Lubricant, Type II	(CAGE 81349) NIIN 00-961-8995
As Required	Nitrogen, Oil-free, Water Pumped, Type I, Class I, Grade B	Fed Spec BB-N-411 NIIN 00-985-7275

Support Equipment Required

Quantity	Description	Reference Number
1	Oxygen Systems Components Test Stand	1172AS100 or 1316AS100
1	Punch, Filter	31TA10527 (CAGE 99251)

CAUTION

Be extremely careful when handling piston assembly (7, figure 13-10). The length and degree of parallelism of the cord is very critical. Do not bend or damage the rod of the piston assembly.

NOTE

Unless otherwise noted, index numbers in this paragraph, refer to figure 13-10.

Use only new preformed packings and O-rings. Clean in accordance with paragraph 13-91, step 2 prior to installation.

1. If required assemble piston assembly (7). Install helical compression spring (10) and guide washer (9), shim (24), (regulator P/N 3260011-0101 and 3260011-0701 only) and push rod (11) (regulator P/N 29270 Series only) and secure to piston (12) with screw (8).

2. Assemble inlet toggle (3), pin (4), and toggle cap (1) as shown in figure 13-5.

NOTE

Be sure flat on pin (4) is in the proper orientation during assembly.

3. (Regulators P/N 29270 Series only.) Place packing (20) onto seat (19). Install packing (20) and seat (19), packing side down, into the bore of inlet valve body (23). Install valve (18).

4. (Regulators P/N 29270 Series only.) Install spring (17), with small end of spring toward valve (18) or valve stem (21). Install filter (15) on top of sleeve (16, with fine mesh down) and install over spring (17) in inlet valve body (23). Insert retaining ring (14) and use filter punch to seat retaining ring into groove.

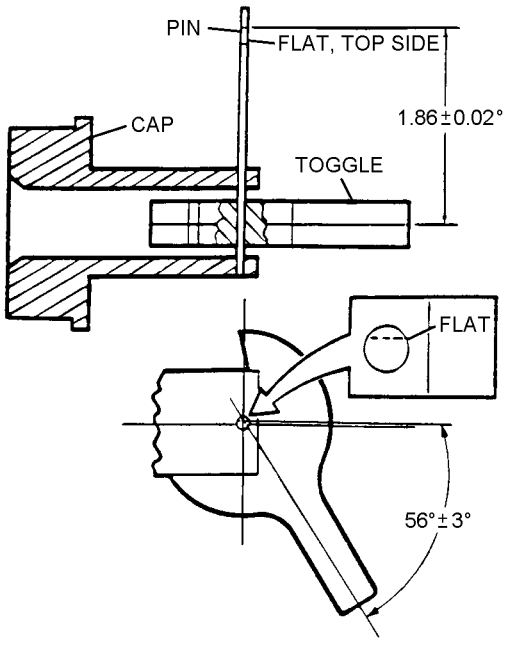


Figure 13-5. Inlet Valve Toggle Assembly

5. Install packing (13) onto the groove of piston assembly (7). Fill the groove of packing (13) with (Krytox 240 AC).

6. Install piston assembly (7) into inlet valve body (23).

7. (Regulator P/N 3260011-0101 and 3260011-0701 only.) Insert packing (20), seat insert (22), and valve stem (21) into inlet valve body (23).

8. (Regulator P/N 3260011-0101 and 3260011-0701 only.) Align valve stem (21) with threaded hole in piston assembly (7). Insert a screwdriver through inlet port of inlet valve body (23) and tighten valve stem (21). Push down on piston assembly (7) while tightening valve stem (21) raise stem off seat insert (22). Turn valve stem (21) into piston assembly (7) until top of piston assembly is 1/2 inch from top of inlet valve body (23).

9. (Regulator P/N 3260011-0101 and 3260011-0701 only.) Install spring (17), with small end of spring toward valve (18) or valve stem (21). Install filter (15) on top of sleeve (16, with fine mesh down) and install over spring (17) in inlet valve body (23). Insert retaining ring (14) and use filter punch to seat retaining ring into groove.

10. Install cam follower (5) and toggle cap (1) onto inlet valve body (23) and secure with screws (2).

NOTE

With the toggle in the OFF position, the toggle should have a slight amount of free play (approximately 1/16 inch). Proceed with steps 11 and 12 for adjustment of toggle assembly.

11. To adjust the freeplay, remove two screws (2), toggle cap (1), and cam follower (5). Proceed to do one of the following:

a. For too much freeplay, add shims (6) as required.

b. For no freeplay, remove shims (6) as required or remove piston assembly (7) and turn the screw of the piston assembly counterclockwise to shorten the length.

12. Reinstall piston assembly (7), cam follower (5) toggle cap (1) and secure with screws (2). Recheck freeplay of toggle, if freeplay is not acceptable, repeat steps above.

13. Salvage the tubing and inlet valve attaching block from a discarded pressure gage assembly. Cut, pinch and silver solder the tubing end.

14. Install pinched-and -soldered tubing and packing (22, figure 13-6) into inlet valve pressure gage port with screws (21, figure 13-6).

NOTE

At this point it is necessary to check the inlet valve assembly for leakage. Ensure inlet toggle is in OFF position.

15. Using test stand, apply 50 psig to inlet of the valve assembly. Apply leak detection compound to valve outlet. There shall be no leakage.

16. If leakage occurs, refer to troubleshooting table 13-5.

17. Turn off nitrogen source, bleed pressure from test stand and Inlet Valve Assembly. Disconnect inlet valve from test stand.

13-102. ANEROID AND AIR INLET HOUSING ASSEMBLY. To assemble the Aneroid and Air Inlet Housing Assembly, proceed as follows:

NOTE

Cement gasket (70) to air inlet housing assembly (69) using method described in steps 1 through 4.

Materials Required

Quantity	Description	Reference Number
As Required	Adhesive	RTV 734 (CAGE 81349)
As Required	Toluene	TT-T-548 NIIN 00-281-2002
As Required	Xylene	TT-X-916 (CAGE 81348)

1. Clean surfaces to be bonded with Xylene or Toluene and allow to air dry.

2. Coat the metal sealing surface of the air inlet housing assembly (69) and gasket (70) with adhesive and allow to air dry for five minutes.

3. Bond gasket (70) to air inlet housing assembly (69) and allow to cure at room temperature for 24 hours.

4. Visually examine gasket (70) and air inlet housing assembly (69) to be certain there are no air pockets in the bond. The parts must be flat, even, and firmly cemented to each other.

CAUTION

Use extreme care when handling throttling plate (64). Throttling plate has a polished, lapped surface. Oil from skin, nicks, or scratches can damage plate.

NOTE

Start installation with a 0.071 shoulder screw (63).

5. Place spring washer (65) on shoulder of throttling plate (64), convex portion of washer toward plate. Hold spring washer (65) and throttling plate (64) against bottom of aneroid assembly (68), attach with screw (63).

6. Screw the aneroid into air inlet housing assembly (69). With throttling plate (64) held flat against aneroid assembly (68), the depth of the plate below the end of the housing should be preset to 3/32 inch.

7. Install screen (67) and nut (66) while holding aneroid assembly (68) in place. Tighten nut (66) snugly.

8. Place spring (62) on shoulder of nut (66). Place sleeve (61), spring (60), one washer (59), and cap (58) on top of spring (62).

9. Install pivot block (57) into air inlet housing assembly (69) and secure in place with retaining ring (56).

10. Install one setscrew (53) into cam (52). Do not tighten.

CAUTION

When installing air inlet housing assembly (69), ensure tube (71) located on check valve assembly (73) is aligned properly. Tube (71) should be on the emergency toggle side of the regulator.

NOTE

Flat side on cam (52) will be positioned toward inlet valve assembly (49) and radius on cam (52) will be toward radius of toggle (54).

11. Position cam (52) and toggle (54) in the slot of pivot block (57) and insert the pin attached to the inlet valve assembly (49) through each part. Install packing (55), inlet valve assembly (49), and air inlet housing assembly (69) onto regulator housing (132). Secure the inlet valve assembly to regulator housing with screws (50) and washers (51).

NOTE

Ensure after step 12; When the supply toggle is in the OFF position, the regulator NORMAL/100% sleeve (61) should automatically be placed in the 100% mode. Toggle (54) shall have no spring tension at this time in the NORMAL mode position.

12. Place supply toggle in the ON position. Rotate cam (52) so setscrew (53) is visible on the bottom of cam (52) and air inlet housing assembly (69) and regulator housing (132). Tighten setscrew (53) already installed in cam (52) onto the flat of the pin (figure 13-5). Install second setscrew (53).

13-103. TEST PORT ASSEMBLY. To assemble the Test Port Assembly, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Air, Pressurized, Clean and Dry	—
As Required	Glyptal	1201B (CAGE 24452)
As Required	Powder, Talc	—
As Required	Toothpick	—

NOTE

If disassembled, perform steps 1 through 3

Index numbers in steps 1 through 3 refer to figure 13-9.

1. Using a toothpick, apply talc to the slit opening of valve (3) from the open end. Blow excess talc through the slit opening with compressed air.

2. Install valve (3) into fitting assembly (4).

3. Secure cover assembly (2) to fitting assembly (4) with two screws (1) locked in place with a dot of Glyptal.

13-104. PRESSURE BREATHING ANEROID ASSEMBLY. To assemble the Pressure Breathing Aneroid Assembly, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Krytox 240AC Lubricant, Type II	(CAGE 81349) NIIN 00-961-8995

Support Equipment Required

Quantity	Description	Reference Number
1	Ruler	—
1	Scale, Preset	3301338-6001
1	Wrench, Torque	—

NOTE

Index numbers in step 1, refer to figure 13-12.

1. If required, assemble aneroid assembly (6). (Regulators P/N 29270-10A-A1, 3260011-0701, and 3260011-0101 see note figure 13-12) Install baffle (7) and screen (8). Install screw (3) until screw protrudes through retainer (2) 1/32 inch. Install spring (4), retainer (2) with screw (3) installed onto aneroid assembly housing (5) and secure in place with retaining ring (1).

2. Apply a light film of lubricant to packing (80) and install packing into groove on cover assembly (78).

3. Press aneroid assembly (75) onto cover assembly (78). Ensure air port opening on cover assembly (78) is aligned with test port opening on housing of aneroid assembly (75). Align screw holes in cover with the through holes in the aneroid assembly. Start three screws (76). Do not tighten.

4. Place the aneroid preset scale between the aneroid assembly (75) and cover assembly (78). The preset height shall be 0.045 to 0.050 inch or 3/64 inch if ruler is used.

5. Turn the three screws (76) into the cover until the preset scale is snug.

6. Remove the preset scale and install the remaining three remaining screws (76). Tighten all screws equally and torque to 10 to 12 oz-in.

7. Place spring (86) into counterbore of control valve well in regulator housing (132). Apply a light film of lubricant to packing (84) and place into groove on valve seat (83).

8. Apply a light coat of lubricant to stem of valve (85) and valve seat (83). Wipe off excess with lint free cloth. Insert stem of valve (85) through hole grooved side in valve seat (83) and grip stem with tweezers. Install the valve and valve seat over spring (86) and secure with retaining ring (82). Ensure retaining ring is seated in groove.

9. Installation of the aneroid assembly (75) will be accomplished after Demand Valve/Seat and Matched Valve Leakage Test (paragraph 13-109).

13-105. EMERGENCY PRESSURE LEVER ASSEMBLY AND DEMAND VALVE LEVER ASSEMBLY. To assemble the Emergency Pressure Lever Assembly and Demand Valve Lever Assembly, proceed as follows:

1. Reinstall setscrews (119) and (114) into lever assemblies (118) and (113) if required. Install emergency lever and bracket assembly (118) into regulator housing (132) and secure with screws (120).

2. Position spring (122) and guide (121) in recess in regulator housing (132).

3. Insert demand valve lever assembly (113) through port plug (96) opening. Position valve lever assembly (113) over guide (121) and spring (122).

4. Secure demand valve lever assembly (113) with screw (115) first to draw down lever assembly (113). Install washer (117) and screw (116). The screw and washer is installed inboard of regulator housing (132).

13-106. MANUAL SAFETY PRESSURE ASSEMBLY. To assemble the Manual Safety Pressure Assembly, proceed as follows:

NOTE

Index numbers in steps 1 through 5, refer to figure 13-8.

1. Assemble cap screw (4), hex nut (5), and push rod (6) until approximately 7/16 inch of cap screw (4) extends from push rod (6). Tighten hex nut (5) against push rod (6) after adjusting the cap screw (4).

2. Install helical compression spring (10), manual safety guide (9) and actuating rod (8) in manual safety housing (11).

3. Install helical compression spring (2). Secure with adjusting screw (1). Adjusting screw (1) shall be flush with top of manual safety pressure assembly (47, figure 13-6).

4. Hold manual safety housing (11) between fingers and apply pressure on adjusting screw (1).

5. Place washer (7) on manual safety housing (11). Align push rod assembly (3) with actuating rod (8). Using a 5/16-inch open end wrench, tighten push rod assembly (3) to actuating rod (8).

6. Install performed packing (45) and manual safety pressure assembly (44) into regulator housing (132).

7. If required, assemble toggle assembly (34) as follows: Install emergency toggle (36) in clevis block (37) and secure with pin (35).

8. Install helical compression spring (43), shim (41), top plate (40), push rod (42), and toggle assembly (34) into regulator housing (132) with emergency position inboard. Attach with washers (39) and screws (38).

NOTE

Ensure toggle returns from TEST MASK position to NORMAL when released.

9. Final adjustments will be performed during post assembly Bench Test (paragraph 13-59).

13-107. DEMAND VALVE ASSEMBLY. To assemble the Demand Valve Assembly, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Krytox 240AC Lubricant, Type II	(CAGE 81349) NIIN 00-961-8995

CAUTION

Use extreme care during assembly to prevent damage to demand valve seat (125).

NOTE

Steps 1 through 4 are for regulator P/N 29270 Series only. Steps 5 through 11 are for regulator P/N 3260011-0101 and 3260011-0701 only.

1. Install packing (131) into regulator housing (132).

NOTE

It may be necessary to hold demand valve stem assembly (129) when adjusting screw. If so, care must be taken to ensure no damage is done to demand valve stem assembly (129).

2. If required, install stem adjusting screw onto stem assembly (129) until two threads remain. Using tweezers, pass stem assembly (129) through port plug (96) opening and align slot on valve lever connector (144) with slot opening on lever assembly (113). Continue to hold stem assembly (129) and carefully align bushing (130) and stem assembly (129) in regulator port and slide bushing (130) onto stem assembly (129). Ensure port hole in bushing aligns with port hole to outlet of regulator.

3. Place packing (127) on top of bushing (130). Using tweezers, place valve (128) on top of stem assembly (129).

NOTE

During assembly of valve seat (125) in step 4, it is extremely important to align port hole on valve seat (125) and port in regulator housing (135) from inlet valve assembly (49). Failure to align ports will result in regulator failing Flow Suction Test during Bench Test.

4. Mark port location of valve seat (125) and port location of inlet valve assembly on regulator housing (132). Apply a light film of lubricant to packing (126) and place packing (126) on shoulder of seat (125) and place into demand valve bore and secure in place with retaining ring (123). (If assembly is loose, install washer (124) as required). Ensure port in demand valve seat (125) aligns with port in regulator housing (132).

5. Install packing (131) and demand valve bushing (130) ensuring hole in bushing aligns with hole in regulator housing (132).

6. Install packing (137) and extension stem assembly (136) into demand valve seat (138).

7. Pass end of extension stem assembly (136) through demand valve seat (138) and assemble to valve stem assembly (140). Turn valve stem assembly (140) onto extension stem assembly (136) until valve is just seated.

8. Install packing (139) on top of demand valve bushing (130) in regulator housing (132).

NOTE

Mark the port location of the inlet port on the regulator housing (132) and the port hole location on top of demand valve seat (138) prior to performing step 9 and 10.

9. Install extension stem assembly (136), demand valve seat (138) and valve stem assembly (140) as a unit into the regulator housing (132). Turn regulator hous-

ing (132) so port plug access faces up. Using tweezers insert screw (98) between fork on lever assembly (113) and align screw (98) with valve stem assembly (140) (it may be necessary to push demand valve seat (138) in toward bushing (141) to install screw). When aligned, push slightly with free hand and push demand valve seat (138) toward screw (101). Continue to apply pressure and remove tweezers. Insert a jeweler's screwdriver through hole located above screw (98) and install screw (98) into valve stem assembly (140) approximately two turns.

10. Using needle nose pliers, hold valve stem assembly (140) and adjust screw (98) until three threads remain showing between screw (98) and valve stem assembly (140).

11. Ensure alignment marks are aligned. Install packing (135) so that it lies around demand valve seat (138). Install valve retainer (134) and secure with retaining ring (123).

12. Depress emergency pressure lever and bracket assembly (118) and lever assembly (113) while observing through plug (96) port for proper operation of Demand Valve Assembly.

13-108. DEMAND VALVE ADJUSTMENTS. To adjust lever assembly (113) and emergency pressure lever assembly (118), proceed as follows:

Support Equipment Required

Quantity	Description	Reference Number
1	Ruler	—

1. To adjust lever assembly (113), insert jeweler's screwdriver through screw (98) hole, in regulator housing (132) and turn valve lever connector (147). While making adjustments, prevent valve stem assembly (129) from turning with needle nose pliers inserted through plug (96) port.

2. Adjust lever assembly (113) so that the back of the lever is 1/32 inch lower than the front. Take the back measurement in front of setscrew (114). Take the front measurement between the two access holes for screws (115) and (116). Measurements are made from the bottom of regulator housing (132).

3. Turn setscrew (119) on lever and bracket assembly (118) so that lever and bracket assembly (118) is 5/16 inch above lever assembly (113). Take measurement from forked end of lever and bracket assembly (118) down to lever assembly (113).

4. Install packing (97), plug (96), retaining ring (95), screw (98), and lock-o-seal (99), into regulator housing (132).

13-109. DEMAND VALVE/SEAT AND MATCHED VALVE ASSEMBLY LEAKAGE TEST. To perform the Demand Valve/Seat and Matched Valve Assembly Leakage Test, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Compound, Leak Detection, Type 1	MIL-L-25567

Support Equipment Required

Quantity	Description	Reference Number
1	Tube, Leak Test	31TA10205 NIIN 00-831-5428

1. Screw leak test tube into injector nozzle port in regulator housing. Apply 50 psig pressure to regulator inlet. Turn supply toggle to the on position and draw a film of leak detection solution across the outlet of the leak test tube.

2. If film distends, leakage is indicated. Recheck assembly and adjustments of valve stem assembly (129) and lever assembly (113).

3. After test, remove leak test tube.

4. Draw a film of leak detection solution over retaining ring (82) and valve seat (83).

5. If film distends, leakage is indicated. Recheck retaining ring (82) and packing (84) for proper installation. Check valve seat (83) for scoring. Replace as required. Remove regulator from test stand and remove pinched-and-soldered tubing and packing (22) from inlet valve pressure gage port.

6. Install push rod (77) through hole in cover assembly (78) and valve control diaphragm (81) (with protruding ridge up) on cover assembly (78).

NOTE

Regulators P/N 3260011-0101 and 3260011-0701 incorporate a retaining ring screw plate (P/N 1648004-1) not listed in IPB. If installed, continue to use. The retaining ring screw plate is not required on regulator P/N 29270 Series.

7. Install aneroid assembly (75) with barb positioned toward top of regulator housing (132). If required, place retaining ring screw noted above around aneroid assembly (75) and secure with screws (79).

8. Final adjustments of the seat and matched valve assembly will be accomplished during post assembly Bench Test (paragraph 13-59).

13-110. DIAPHRAGM ASSEMBLIES. To assemble the Diaphragm Assemblies, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Adhesive	RTV 734 (CAGE 81349)
As Required	Krytox 240AC Lubricant, Type II	(CAGE 81349) NIIN 00-961-8995

NOTE

Index numbers in steps 1 and 2, refer to figure 13-14.

1. When assembling diaphragm (4) to diaphragm plate (2), cement parts together with adhesive.

2. Apply a light coat of lubricant to inner surface of diaphragm plate (5), inner surface of diaphragm cover (108, figure 13-6) and around diaphragm flange (6). Install diaphragm nut (1) and tighten.

3. Attach diaphragm assembly (112) to emergency lever and bracket assembly (118) by sliding lever forks over flange on diaphragm assembly (112).

4. Install packing (111) on the tube and ring assembly (109). Install tube and ring assembly (109), diaphragm (108) and diaphragm cover (105) on regulator housing (132). Secure with washers (107) and screws (106).

5. Install inlet filter (110) if required.

13-111. OUTLET, MIXING TUBE, AND INJECTOR ASSEMBLY. To assemble the Outlet, Mixing Tube, and Injector Assembly, proceed as follows:

Support Equipment Required

Quantity	Description	Reference Number
1	Wrench, Spanner	QB70750-9 NIIN 00-302-6456

1. Insert injector nozzle (94) and injector sleeve (93) into regulator housing (132). Align window of injector sleeve (93) with port in regulator housing (132).

2. Install mixing tube (92) with spanner wrench.

3. Install packing (91) and outlet (87) into regulator housing (132). Secure with plain washers (90), lock washers (89), and screws (88).

13-112. TEST PORT ASSEMBLY. To install the Test Port Assembly, proceed as follows:

1. Install tubes (46) and (47) onto test port assembly (48).

2. Position test port assembly (48) into regulator housing (132) between aneroid assembly (75) and blinker assembly (31) cavity. Connect tube (46) to aneroid assembly (75) and connect tube (47) to barb located on emergency toggle side of air inlet housing assembly (69).

13-113. BLINKER ASSEMBLY. To install the Blinker Assembly, proceed as follows:

1. Install blinker diaphragm (36), (with metal plate facing up), sealing ring (35), (flat surface facing up), blinker assembly (34), spacer (33) and flat washer (32) (if required) into regulator housing (132).

2. Install retaining ring (31), packing (30) and observation window (29).

13-114. GAGE AND LIGHT MOUNTING PLATE ASSEMBLY. To assemble the Gage and Light Mounting Plate Assembly, proceed as follows:

NOTE

Index numbers in steps 2 and 3, refer to figure 13-7.

1. Assemble pressure gage assembly if required. Attach oxygen pressure gage assembly (1) to mounting plate assembly (12) with two screws (4), two washers (3) and two nuts (2).

2. Attach wire assembly (7) to mounting plate assembly (12) with clamp (6), screw (5), washer (3) and nut (2). Tighten gage assembly.

3. Install check valve guide (28) through back of gage and light mounting plate assembly (19) and secure with check valve fitting (24). Ensure items 25 through 27 remained in place during assembly.

4. Install new packing (22) on pressure gage tubing block. Route tubing and wire assembly between regulator housing (132) and interlock assembly from inlet valve and air inlet housing assembly (69).

5. Align test port assembly (48) and hole in gage and light mounting plate assembly (19) and install light mounting plate (19) onto regulator housing (132). Route tube (23) between gage tube and electrical wire. Using needle nose pliers, connect tube (23) to air inlet housing assembly (69). Secure block to inlet valve assembly (49) with screws (21).

6. Secure gage and light mounting plate assembly (19) to regulator housing (132) with screws (20). Ensure check valve fitting (24) is tight.

7. Install assembled dust cap assembly (11) to check valve fitting (24).

8. Perform Bench Test in accordance with paragraph 13-59.

13-115. PLASTIC LIGHT PLATE. To assemble the Plastic Light Plate, proceed as follows:

NOTE

Items (16 and 17) are used on regulators P/N 29270-10A-A1, 3260011-0101, and 3260011-0701. If regulators have the observation window (29) installed, items (16 and 17) are not required.

1. Secure test port assembly (48) with retaining ring (18). Install gasket (15). Install gasket (16) and cover plate (17) if required.

2. Remove dust cap assembly (11) from check valve fitting (24). Install plastic light plate (13) onto gage and light mounting plate assembly (19). Install dust cap assembly (11) into check valve fitting (24) and cord assembly (6) with screw (9) and washer (10). Secure plastic light plate with screws (14).

3. Install lamp (1) into lamp holder and filter assembly (4). Install grommet (5) and lamp holder and filter assembly (4).

4. Place the supply toggle in the OFF position and the air shutoff toggle in the 100% OXYGEN position. Complete required Maintenance Data Collection Systems forms.

13-116. STORAGE OF READY-FOR-ISSUE (RFI) OXYGEN REGULATORS. To store Ready-For-Issue (RFI) oxygen regulators, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Bag, Plastic	MIL-B-117 (CAGE 81349)

1. Place oxygen regulator in plastic bag for storage.

Section 13-5. Illustrated Parts Breakdown

13-117. GENERAL.

13-118. This section lists and illustrates the assemblies and detail parts of the regulators listed in table 13-15. This table also lists the usable on codes used throughout this illustrated parts breakdown. The regulators are manufactured by Litton Industries, Davenport, Iowa, CAGE 99251.

13-119. The Illustrated Parts Breakdown should be used when requisitioning, storing, issuing, and identifying parts. It also illustrates disassembly and assembly relationships.

Table 13-15. Regulator Usable On Codes

Part No.	Usable On Code
29270-10A-B1	A
29270-10A-A1	B
3260011-0701	C
3260011-0101	D
29270-10A-B2	E

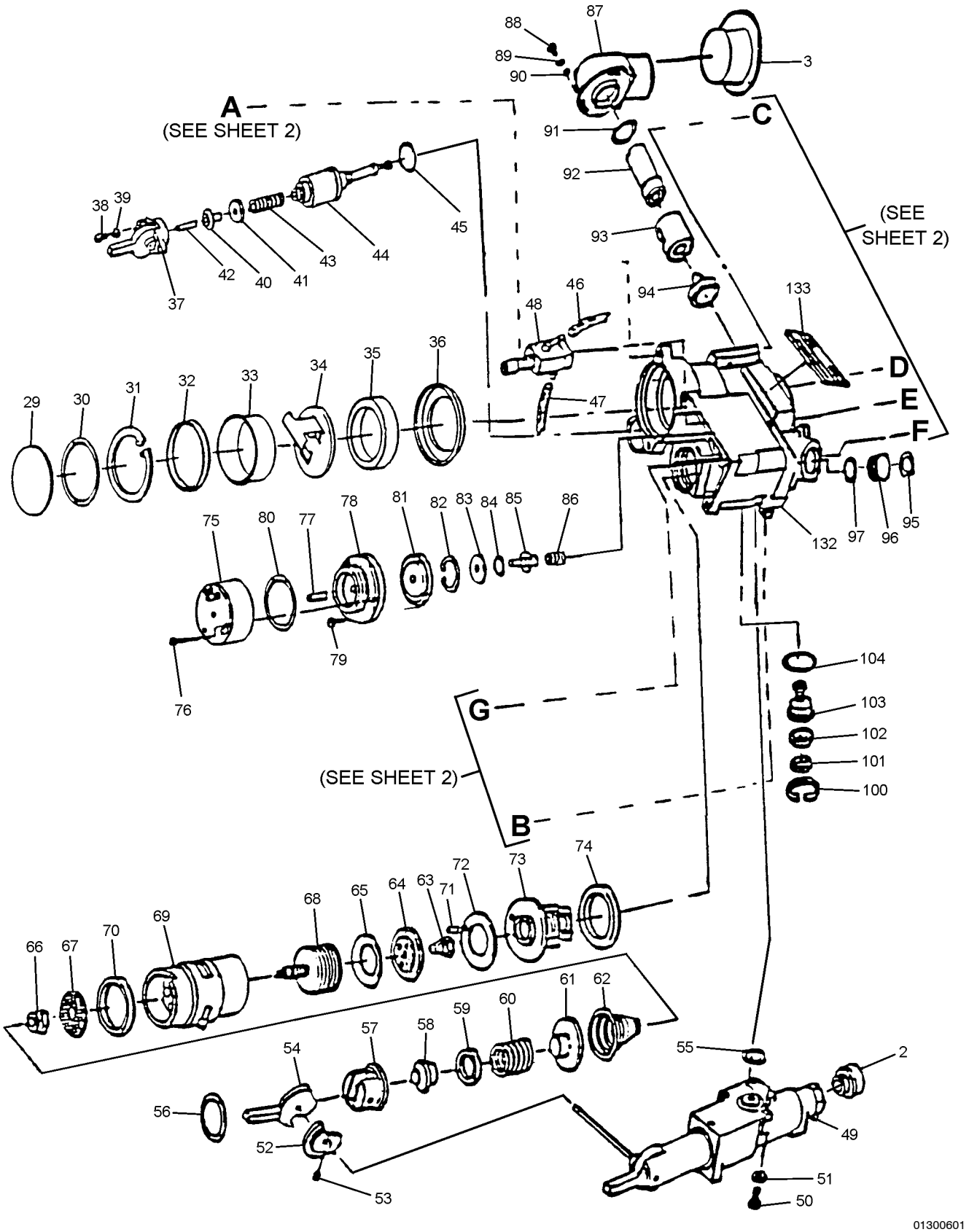


Figure 13-6. Aircraft Panel Mounted Regulators, 29270 and 3260011 (Sheet 1 of 2)

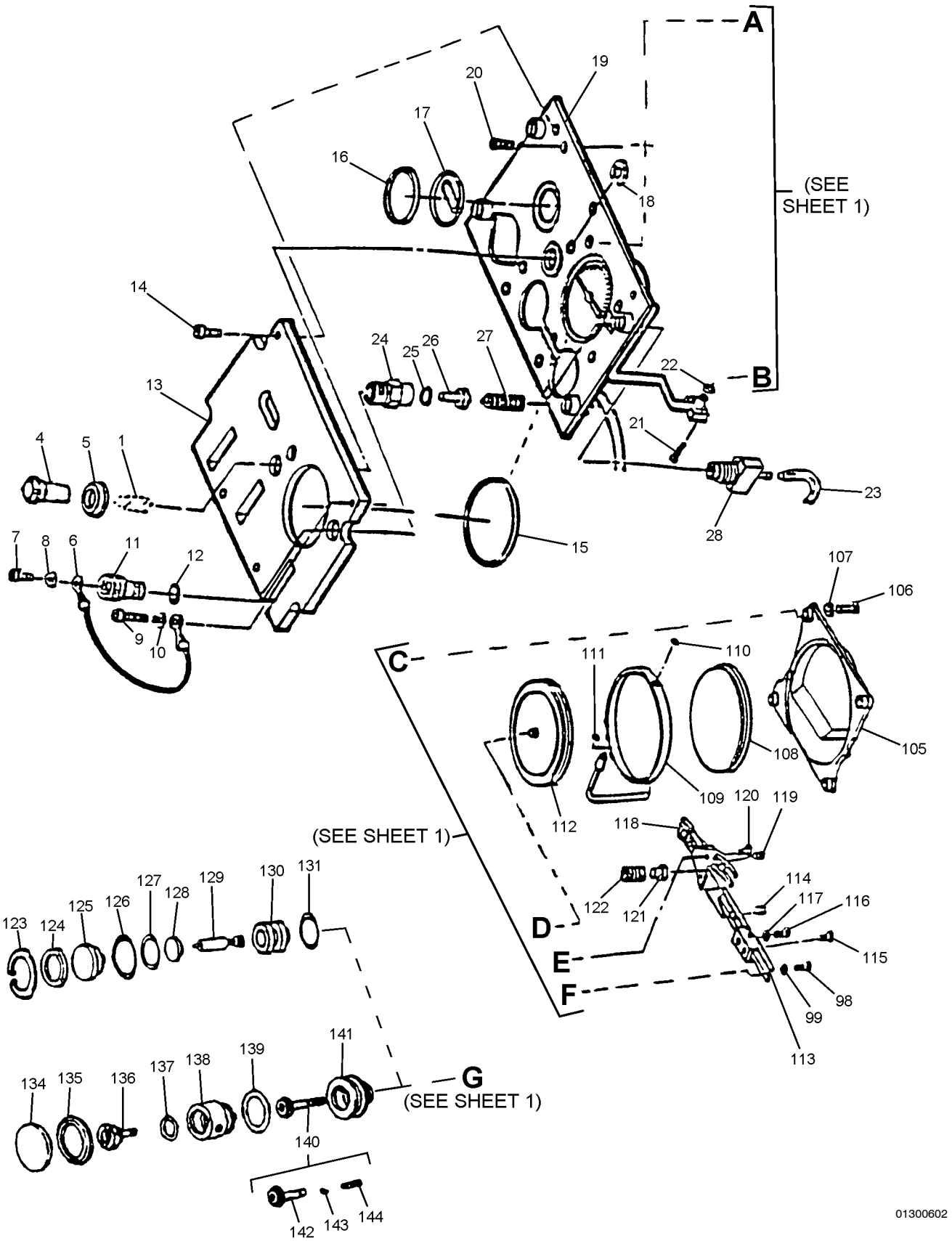


Figure 13-6. Aircraft Panel Mounted Regulators, 29270 and 3260011 (Sheet 2 of 2)

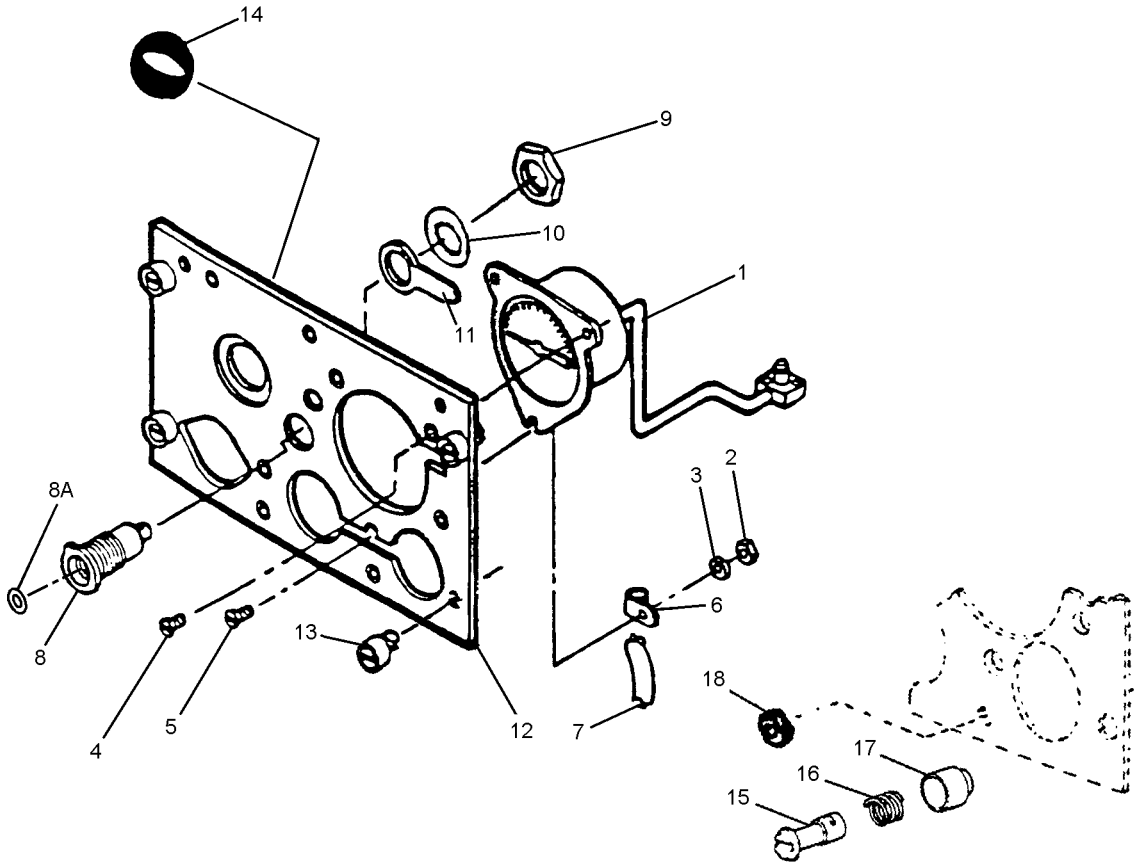
Figure and Index Number	Part Number	Description 1 2 3 4 5 6 7	Units Per Assembly	Usable On Code
13-6	29270-10A-B1	REGULATOR, Oxygen	REF	A
	29270-10A-A1	REGULATOR, Oxygen	REF	B
	3260011-0701	REGULATOR, Oxygen	REF	C
	3260011-0101	REGULATOR, Oxygen	REF	D
	29270-10A-B2	REGULATOR, Oxygen	REF	E
-1	MS25237-327	. LAMP, Incandescent	1	
-2	M5501/5-R2	. PLUG, Pipe thread	1	
-3	1613723-17	. PLUG, Shipping (KC)	1	
-4	A-7077-1	. LAMP HOLDER AND FILTER ASSEMBLY (99251 SCD 1612292-1)	1	
-5	1612293-1	. GROMMET (KC)	1	
-6	1617301-1	. CORD ASSEMBLY	1	
-7	NAS1190E04P3N	. SCREW (KF)	1	
-8	1603660-35	. WASHER, Flat (KF)	1	
-9	MS35214-27	. SCREW (KF)	1	
-10	NAS620C6	. WASHER, Flat (KF)	1	
-11	16117200-1	. CAP ASSEMBLY, Dust	1	
-12	MS9068-006	. PACKING, Preformed (KC)	1	
-13	1616332-1	. PLATE, Light	1	A, B, C
	1611735-4	. PLATE, Light	1	D
	1654318-1	. PLATE, Light, NVIIS	1	E
-14	MS35214-26	. SCREW (KF)	3	
-15	813111-1	. GASKET (KC)	1	
-16	813112-1	. GASKET (KC) (Note 1)	1	B, C, D
-17	1621386-2	. COVER, Plate	1	D
-18	MS16632-4025	. RING, Retaining (KF)	1	A, B, C, E
-19	1612055-14	. PLATE ASSEMBLY, Gage and light mounting (figure 13-7 for BKDN)	1	A, B, C
	1612055-9	. PLATE ASSEMBLY, Gage and light mounting (figure 13-7 for BKDN)	1	D
	1612055-25	. PLATE ASSEMBLY, Gage and light mounting (figure 13-7 for BKDN)	1	E
-20	MS51959-27	. SCREW (KF)	4	
-21	FFILO-3031/2SS	. SCREW (KF)	2	
-22	1631697-1	. PACKING, Preformed (KC)	1	
-23	L1201-030-1	. TUBE (Note 1)	1	A, B, C, E
-24	1648005-1	. FITTING, Check valve	1	A, E
	1617195-1	. FITTING, Check valve	1	B, C, D
-25	MS9068-008	. PACKING, Preformed (KC)	1	A, E
-26	1617201-1	. VALVE, Check	1	
-27	1617202-5	. SPRING, Helical compression	1	
-28	1648006-1	. GUIDE, Check valve (Note 1)	1	A, B, C, E
-29	1648614-1	. WINDOW, Observation (Note 1)	1	A, B, C, E
-30	1602321-94	. PACKING, Preformed (KC) (Note 1)	1	A, E
	812921-1	. PACKING, Preformed (KC)	1	B, C, D
-31	L1001-294137	. RING, Retaining (KF)	1	
-32	1603660-120	. WASHER, Flat (KF)	AR	
-33	1614152-1	. SPACER	1	
-34	1614148-2	. BLINKER ASSEMBLY	1	
-35	1614153-1	. RING, Sealing (KF)	1	

Figure and Index Number	Part Number	Description 1 2 3 4 5 6 7	Units Per Assembly	Usable On Code
13-6-36	1614155-1	. DIAPHRAGM, Blinker (KC)	1	
-37	1604108-1	. TOGGLE ASSEMBLY (KF)	1	
-38	FFILO-4051/2SS	. SCREW (KF)	2	
-39	MS35338-154	. WASHER (KF)	2	
-40	1623317-1	. PLATE, Top	1	
-41	814921-1	. SHIM (KF) (Note 2)	AR	
	814921-2	. SHIM (KF) (Note 2)	AR	
-42	1617226-1	. ROD, Push (KF)	1	A, B, E
	816764	. ROD, Push	1	C, D
-43	814993	. SPRING, Helical compression (KF)	1	
-44	1602949-2	. PRESSURE ASSEMBLY, Manual Safety (figure 13-8 for BKDN)	1	
-45	1602321-5	. PACKING, Preformed (KC)	1	
-46	L1201-010-1	. TUBE (Note 1)	1	A, B, C, E
-47	L1201-025-1	. TUBE (Note 1)	1	A, B, C, E
-48	1648603-1	. TEST PORT ASSEMBLY (figure 13-9 for BKDN) (Note 1)	1	
-49	1625350-4	. VALVE ASSEMBLY, Inlet (figure 13-10 for BKDN)	1	
-50	MFILO-607SS	. SCREW (KF)	3	
-51	MS35338-155	. WASHER, Lock (KF)	3	
-52	1617298-1	. CAM (KF)	1	A, B, C, E
-53	AN565D2L2	. SETSCREW (KF)	2	A, B, C, E
-54	1649548-1	. TOGGLE, Diluter (KF)	1	A, B, C, E
	1604106-1	. TOGGLE, Diluter	1	D
	RP-62-500SS	. PIN, Roll (Not pictured in IPB)	1	D
	1617194-2	. BLOCK, Pivot (Not pictured in IPB)	1	D
-55	813058-1	. PACKING, Preformed (KC)	1	
-56	1602678-4	. RING (99251 SCD 1602678-4) (KF)	1	
-57	1617194-1	. BLOCK , Pivot	1	A, B, C, E
-58	1604110-1	. CAP, Spring retaining	1	
-59	1603660-6	. WASHER, Flat (KF)	AR	
-60	1647782-1	. SPRING, Helical compression (KF)	1	A, B, C, E
	1626796-1	. SPRING, Helical compression	1	D
-61	1626803-1	. SLEEVE, Air shutoff (KF)	1	
-62	1611713-1	. SPRING, Conical compression	1	
-63	758649-1	. SCREW .071 (KF) (Note 2)	1	
	758649-2	. SCREW .081 (KF) (Note 2)		
	758649-3	. SCREW .087 (KF) (Note 2)		
	758649-4	. SCREW .062 (KF) (Note 2)		
-64	766097-1	. PLATE, Throttling (KF)	1	
-65	PB50828-1	. WASHER, Spring (KF)	1	
-66	1611712-1	. NUT (KF)	1	
-67	813077-1	. SCREEN, Aneroid (KF)	1	
-68	758632-1	. ANEROID ASSEMBLY	1	
-69	1648608-1	. HOUSING ASSEMBLY, Air Inlet (Note 1)	1	A, E
	1617279-1	. HOUSING ASSEMBLY, Air Inlet (Note 1) (Not pictured in IPB)	1	B, C, D
-70	813115-1	. GASKET (KC)	1	
-71	1648606-1	. TUBE	1	A,E

Figure and Index Number	Part Number	Description 1 2 3 4 5 6 7	Units Per Assembly	Usable On Code
13-6-72	1648607-1	. GASKET (KC)	1	A, E
	1617224-1	. GASKET (KC)	1	B, C, D
-73	1648613-1	. ADAPTER AND SPRING ASSEMBLY, Check Valve (figure 13-11 for BKDN)	1	A, E
	1611726-1	. ADAPTER AND SPRING ASSEMBLY, Check Valve (figure 13-11 for BKDN)	1	B, C, D
-74	1623977-2	. GASKET (KC)	1	
-75	1647686-2	. ANEROID ASSEMBLY (figure 13-12 for BKDN)	1	A, E
	1624912-2	. ANEROID ASSEMBLY (figure 13-12 for BKDN)	1	B, C, D
-76	FFILO-1051/2SS	. SCREW (KF)	6	
-77	1617192-2	. ROD, Push (KF)	1	
-78	1617227-1	. COVER ASSEMBLY	1	
-79	1607617-5	. SCREW, Special (KF)	3	
-80	1602321-5	. PACKING, Preformed (KC)	1	
-81	1611730-1	. DIAPHRAGM, Valve control (KC)	1	
-82	L1001-254068	. RING, Retaining (KF)	1	
-83	1632425-1	. SEAT, Valve (KF)	1	
-84	1602321-65	. PACKING, Preformed (KC)	1	
-85	1611739-1	. VALVE (KF)	1	
-86	1625748-1	. SPRING, Helical compression (KF)	1	
-87	1612813-1	. OUTLET	1	
-88	FFILO-4051/2 SS	. SCREW (KF)	2	
-89	MS35338-154	. WASHER, Lock (KF)	2	
-90	WO-4SS	. WASHER, Flat (KF)	2	
-91	1602321-29	. PACKING, Preformed (KC)	1	
-92	761800-2	. TUBE, Mixing	1	
-93	1602956-1	. SLEEVE, Injector	1	
-94	1602821-1	. NOZZLE, Injector (KC)	1	
-95	MS16625-4062	. RING, Retaining (KF)	1	
-96	1611723-1	. PLUG	1	
-97	1602321-3	. PACKING, Preformed (KC)	1	
-98	BH-4021/2SS	. SCREW, Binding Head (KF)	1	
-99	741790-2	. LOCK-O-SEAL (KC)	1	
-100	MS16629-4081	. RING, Retaining (KF)	1	
-101	1626798-1	. WASHER, Cover retaining (KF)	1	
-102	1626797-1	. COVER, Valve relief	1	
-103	1619048-4	. VALVE ASSEMBLY, Relief (figure 13-13 for BKDN)	1	
-104	1602321-35	. PACKING, Preformed (KC)	1	
-105	1612830-1	. COVER, Diaphragm	1	
-106	MFFILO-6091/2SS	. SCREW (KF)	4	
-107	MS35338-155	. WASHER, Lock (KF)	4	
-108	1611734-1	. DIAPHRAGM (KC)	1	
-109	1611729-1	. TUBE AND RING ASSEMBLY	1	
-110	1603942-4	. FILTER, Inlet (KF)	1	
-111	1602321-24	. PACKING, Preformed (KC)	1	
-112	1600632-4	. DIAPHRAGM ASSEMBLY (figure 13-14 for BKDN) (KC)	1	

Figure and Index Number	Part Number	Description 1 2 3 4 5 6 7	Units Per Assembly	Usable On Code
13-6-113	1624909-1	. LEVER ASSEMBLY	1	A, B, E
	1602916-1	. LEVER ASSEMBLY	1	C, D
-114	FO-304SS	. SCREW (KF)	1	
-115	FO-304SS	. SCREW (KF)	1	
-116	FFILO-304SS	. SCREW (KF)	1	
-117	WO-3SS	. WASHER, Flat (KF)	1	
-118	1616994-3	. LEVER AND BRACKET ASSEMBLY	1	A, B, E
	1627610-1	. LEVER AND BRACKET ASSEMBLY	1	C, D
-119	AN565FC4L3	. SETSCREW	1	A, B, E
	1612419-15	. SETSCREW	1	C, D
-120	FO-304SS	. SCREW (KF)	2	A, E
	FO-304BN	. SCREW	2	B, C, D
-121	815601-1	. GUIDE, Spring (KF)	1	
-122	1617202-1	. SPRING, Helical compression (KF)	1	
-123	MS16629-4081	. RING, Retaining (KF)	1	
-124	1626798-1	. WASHER	AR	
-125	1617204-1	. SEAT, Valve (KF)	1	A, B, E
-126	1602321-5	. PACKING, Preformed (KC)	1	
-127	815678-1	. PACKING, Preformed (KC)	1	A, B, E
-128	1617205-1	. VALVE (KF)	1	A, B, E
-129	1625697-1	. STEM ASSEMBLY (KF)	1	A, B, E
-130	1617214-1	. BUSHING (KC)	1	A, B, E
-131	815678-1	. PACKING, Preformed (KC)	1	
-132	1610652-1	. HOUSING, Regulator	1	
-133	1612820-3	. PLATE, Identification (KF)	1	A, B, E
	1612820-5	. PLATE, Identification	1	C, D
-134	1611718-1	. RETAINER, Valve	1	C, D
-135	1602321-5	. PACKING, Preformed	1	C, D
-136	1611717-1	. STEM ASSEMBLY, Extension	1	C, D
-137	813752-1	. PACKING, O-ring	1	C, D
-138	1611715-1	. SEAT, Demand valve	1	C, D
-139	815678-1	. PACKING, O-ring	1	C, D
-140	1602922-2	. STEM ASSEMBLY	1	C, D
-141	1602972-1	. BUSHING, Demand valve	1	C, D
-142	1623897-1	. STEM	1	C, D
-143	812462-1	. INSERT, Locking	1	C, D
-144	1625867-1	. CONNECTOR, Valve lever	1	C, D
	1601343-1	KIT, Parts, pressure demand oxygen regulator field (F) (Note 3)	1	A, B, E
	1601607-1	KIT, Parts, pressure demand oxygen regulator cure-date (C) (Note 3)	1	A, B, E

Notes:
1. Regulator P/Ns 29270-10A-A1, 3260011-0701 and 3260011-0101 are currently being configured to regulator P/N 29270-10A-B1 by Air Force rework facilities. The regulators in this chapter will be maintained at their current configuration during Bench Test. Close attention to Usable On Codes is required. If regulators have updated items installed to configuration 29270-10A-B1, then usable on code (A) will apply for repair for that section only.
2. Selected at assembly.
3. These parts kits do not have stock numbers. If they are needed for repair of the regulator, they must be open purchased by part number from the manufacturer, Litton Industries, Davenport, IA., CAGE 99251.

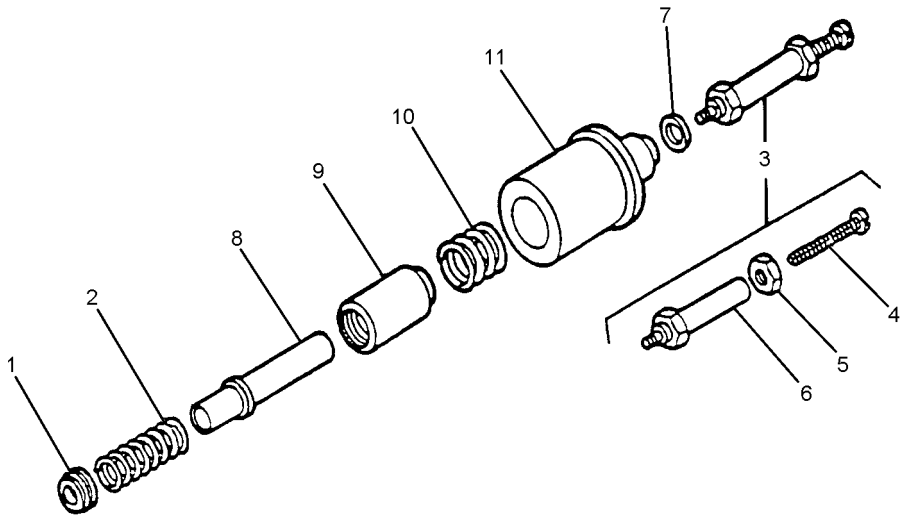


013007

Figure 13-7. Gage and Light Mounting Plate Assembly

Figure and Index Number	Part Number	Description 1 2 3 4 5 6 7	Units Per Assembly	Usable On Code
13-7	1612055-14	. PLATE ASSEMBLY, Gage and light mounting (figure 13-6 for NHA)	1	A, B, C
	1612055-9	. PLATE ASSEMBLY, Gage and light mounting (figure 13-6 for NHA)	1	D
	1612055-25	. PLATE ASSEMBLY, Gage and light mounting (figure 13-6 for NHA)	1	E
-1	813095-1	. GAGE ASSEMBLY, Oxygen Pressure	1	
-2	NO-6SS	. NUT (KD)	3	
-3	LWO-6	. WASHER (KF)	3	
-4	F0-604SS	. SCREW (KF)	3	
-5	1627710-1	. SCREW (KF)	1	
-6	1625446-1	. CLAMP, Loop type (KF)	1	
-7	1608564-1	. WIRE ASSEMBLY (KF)	1	
-8	A-4996	. RETAINER ASSEMBLY, Lamp (99251 SCD 1612294-1)	1	
	1612294-1	. RETAINER ASSEMBLY, Lamp (99251) (Note 1)	1	E
-8A	MS90335-9	. RECEPTACLE CONNECTOR (Note 1)	1	E
-9	MS25082-21	. NUT	1	
-10	AN936A716S	. WASHER	1	
-11	816554	. LUG, Terminal	1	
-12	1646456-1	. PLATE ASSEMBLY, Mounting	1	A, B, C, E
	816593-8	. PLATE ASSEMBLY, Mounting	1	D
-13	1625328-1	. FASTENER, Panel (KF)	4	
-14	9332641	. BLINKER DECAL	AR	
-15	PF3-1/2-38	. FASTENER (72794) (Bendix Spec Cont DWG 799812-1)	4	D
-16	PS3-1/2	. SPRING (72794) (Bendix Cont DWG 799813-1)	4	D
-17	PC3-11/2	. CUP (72794) (Bendix Cont DWG 799813-1)	4	D
-18	812762-1	. CLINCH NUT	3	D

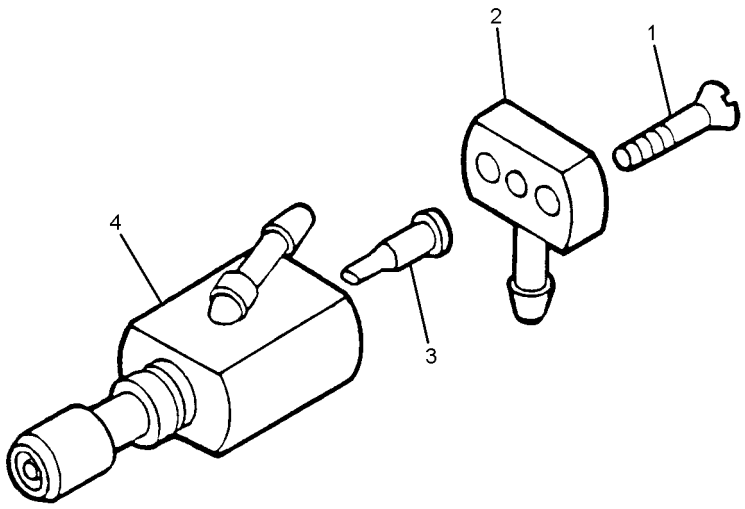
Notes: 1. Receptacle connector P/N MS90335-9 must be inserted into retainer assembly P/N 1612294-1.



013008

Figure 13-8. Manual Safety Pressure Assembly

Figure and Index Number	Part Number	Description 1 2 3 4 5 6 7	Units Per Assembly	Usable On Code
13-8	1648603-1	. PRESSURE ASSEMBLY, Manual safety pressure (figure 13-6 for NHA)	REF	
-1	813108-1	. SCREW, Adjusting (KF)	1	
-2	1608284-1	. SPRING, Helical compression (KF)	1	
-3	1602947-1	. ROD ASSEMBLY, Push	1	
-4	1605328-1	. SCREW, Cap	1	
-5	NO-2SS	. NUT	1	
-6	814427	. ROD, Push	1	
-7	1602951-1	. WASHER, Non-metallic (KC)	1	
-8	814425-1	. ROD, Actuating (KF)	1	
-9	814424-1	. GUIDE, Manual safety (KF)	1	
-10	815504-1	. SPRING, Helical compression (KF)	1	
-11	1602948-1	. HOUSING, Manual safety	1	

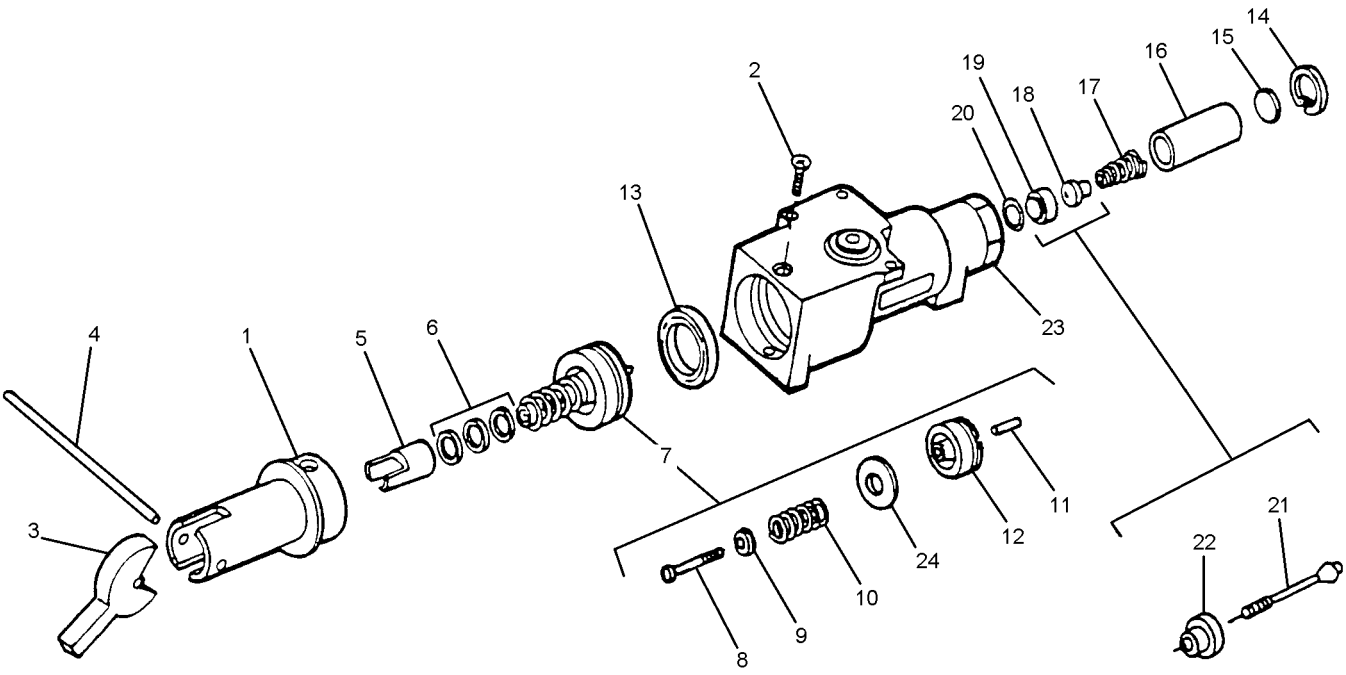


013009

Figure 13-9. Test Port Assembly

Figure and Index Number	Part Number	Description 1 2 3 4 5 6 7	Units Per Assembly	Usable On Code
13-9	1648603-1	. TEST PORT ASSEMBLY . . . . . (figure 13-6 for NHA) (Note 1)	REF	
-1	MS51959-4	. SCREW	2	A
-2	1650852-1	. COVER ASSEMBLY	1	A
-3	1648602-1	. VALVE, Check	1	A
-4	1650851-1	. FITTING ASSEMBLY	1	A

Notes: 1. Regulator P/Ns 3260011-0101, 3260011-0701, and 29270-10A-A1 are currently being configured to P/N 29270-10A-B1 by Air Force rework facilities. If test port is installed on regulators, do not remove. The regulator will be inspected as a 29270-10A-B1 and Usable On Code A will apply.

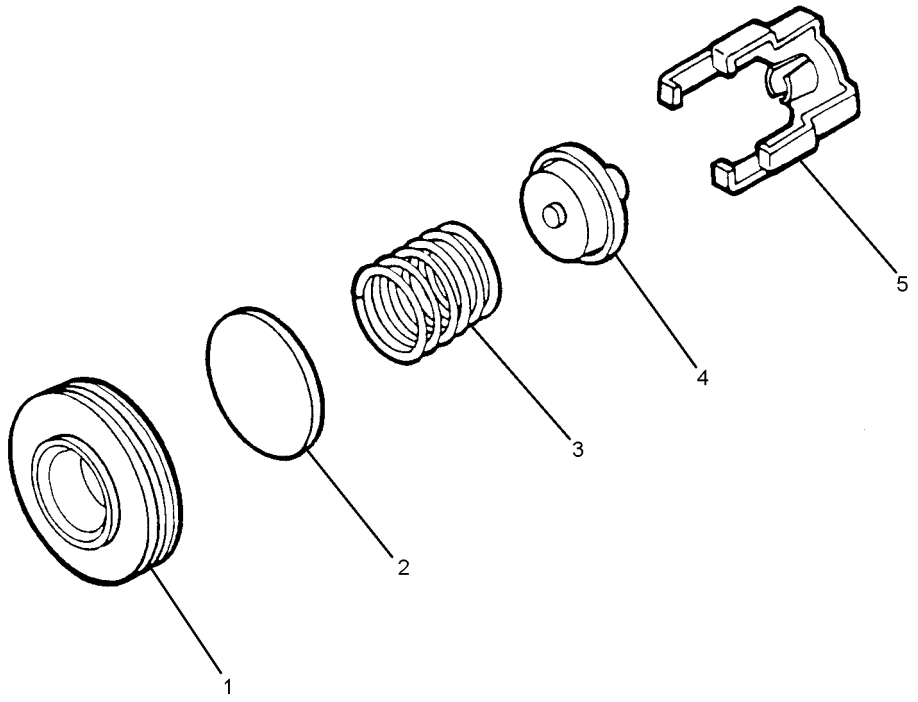


013010

Figure 13-10. Inlet Valve Assembly

Figure and Index Number	Part Number	Description 1 2 3 4 5 6 7	Units Per Assembly	Usable On Code
13-10	1625350-4	. VALVE ASSEMBLY, Inlet (figure 13-6 for NHA)	REF	
-1	1623463-1	. CAP, Toggle	1	A, B, E
	1610647-1	. CAP, Toggle	1	C, D
-2	MS51960-30	. SCREW (KF)	2	
-3	1627791-1	. TOGGLE, Inlet (KF)	1	
-4	1617191-1	. PIN (KF)	1	A, B, C, E
	RP-62-562SS	. PIN	1	D
-5	1631091-1	. FOLLOWER, Cam (KF)	1	
-6	1605349-1	. SHIM (0.0050 IN THK) (KF) (Note 1)	AR	
	1605349-2	. SHIM (0.0100 IN THK) (KF) (Note 1)	AR	
	1605349-3	. SHIM (0.0150 IN THK) (KF) (Note 1)	AR	
-7	1624905-4	. PISTON ASSEMBLY (KF)	1	A, B, E
	1602935-1	. PISTON ASSEMBLY	1	C, D
-8	NAS1190E04P12L	. SCREW	1	A, B, E
	1602932-1	. SCREW	1	C, D
-9	1602933-1	. WASHER, Guide	1	
-10	1648085-1	. SPRING, Helical compression	1	A, B, E
	1602931-1	. SPRING, Helical compression	1	C, D
-11	1602948-1	. ROD, Valve Push	1	A, B, E
-12	1617225-1	. PISTON	1	A, B, E
	1602934-1	. PISTON	1	C, D
-13	816919-18	. PACKING, Preformed (KC)	1	A, E
	816919-3	. PACKING, Preformed (KC)	1	B, C, D
-14	L1001-294031	. RING, Retaining (KF)	1	
-15	1624904-1	. FILTER, Inlet Valve (KF)	1	A, B, E
	1612057-1	. FILTER, Inlet Valve	1	C, D
-16	1626621-1	. SLEEVE	1	
-17	1654948-1	. SPRING, Conical compression (KF)	1	
-18	1654946-1	. VALVE (KF)	1	A, B, E
-19	1654777-1	. SEAT, Inlet valve (KF)	1	A, B, E
-20	1600099-1	. PACKING, O-ring (KC)	1	
-21	1602930-1	. STEM, Valve	1	C, D
-22	1602937-1	. INSERT, Seat	1	C, D
-23	1622735-1	. BODY, Inlet Valve	1	A, B, E
	1611733-1	. BODY, Inlet Valve	1	C, D
-24	814450-1	. SHIM (0.0050 IN THK) (Note 1)	AR	C, D
	814450-2	. SHIM (0.0100 IN THK) (Note 1)	AR	C, D
	814450-3	. SHIM (0.0150 IN THK) (Note 1)	AR	C, D

Notes: 1. Selected at assembly.

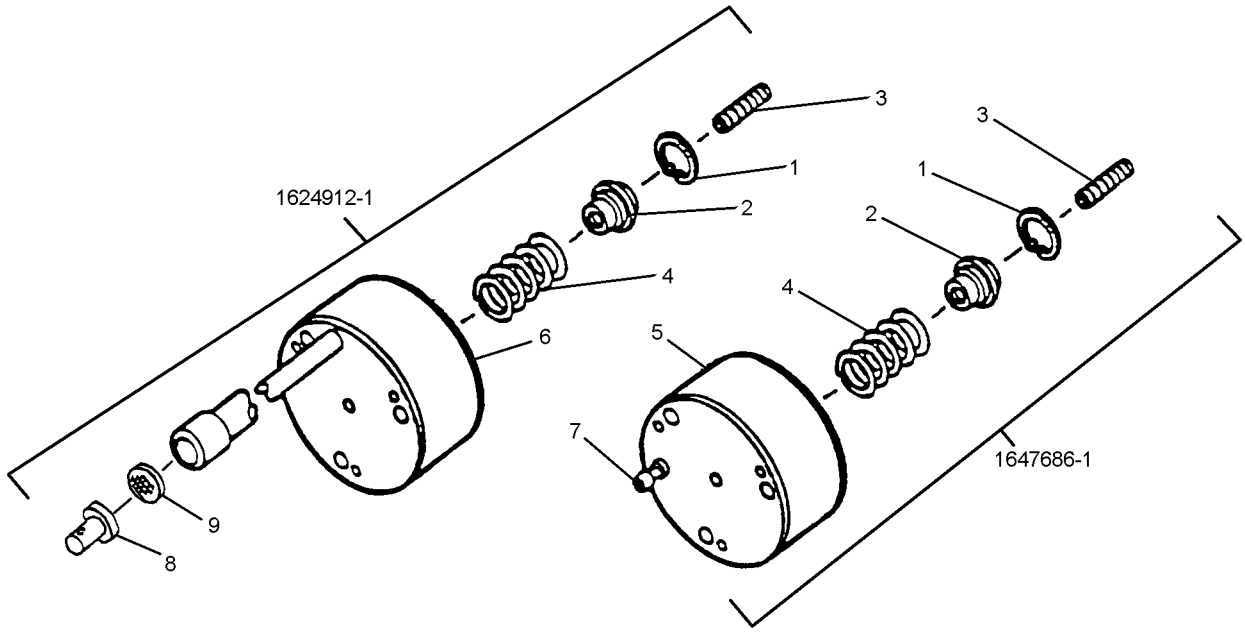


013011

Figure 13-11. Adapter and Spring Assembly, Check Valve

Figure and Index Number	Part Number	Description 1 2 3 4 5 6 7	Units Per Assembly	Usable On Code
13-11	1648613-1	. ADAPTER AND SPRING ASSEMBLY, ... Check valve (figure 13-6 for NHA) (Note 1)	REF	A, E
	1611726-1	. ADAPTER AND SPRING ASSEMBLY, ... Check valve (figure 13-6 for NHA) (Note 1)	REF	B, C, D
-1	1648601-1	. ADAPTER, Check valve	1	A, E
	1611719-1	. ADAPTER, Check valve	1	B, C, D
-2	PB53041-1	. DISC, Check valve (KC)	1	
-3	758636-1	. SPRING, Helical (KF)	1	
-4	763204-1	. ADAPTER ASSEMBLY, Spring (KF)	1	
-5	1611725-1	. RETAINER ASSEMBLY (KF)	1	

Notes: 1. If aneroid housing P/N 1648608-1 and test port assembly (figure 13-9) are installed on regulator P/Ns 3260011-0101, 3260011-0701, and 29270-10A-A1, then Usable On Code A will apply to regulators.

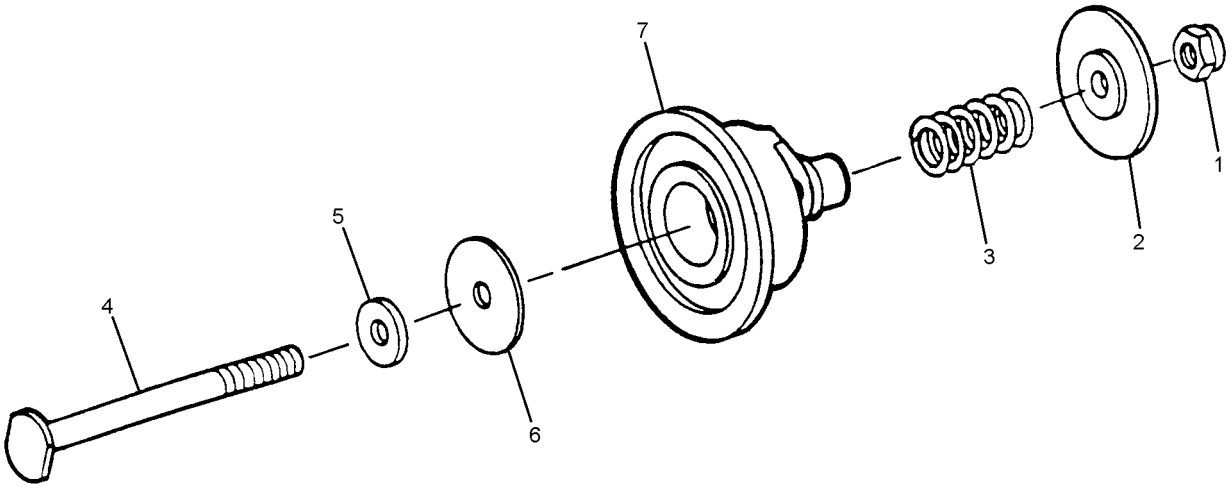


013012

Figure 13-12. Aneroid Assembly

Figure and Index Number	Part Number	Description 1 2 3 4 5 6 7	Units Per Assembly	Usable On Code
13-12	1647686-1	. ANEROID ASSEMBLY ..... (figure 13-6 for NHA) (Note 1)	REF	A, E
	1624912-1	. ANEROID ASSEMBLY ..... (figure 13-6 for NHA) (Note 1)	REF	B, C, D
-1	MS16625-4031	. RING (KF)	1	
-2	1617210-1	. RETAINER, Spring	1	
-3	1623461-1	. SCREW, Pressure Adjusting	1	
	1623461-2	. SCREW, Pressure Adjusting	1	
	1623461-3	. SCREW, Pressure Adjusting	1	
-4	1617202-1	. SPRING, Helical Compression	1	
-5	1647663-1	. HOUSING ASSEMBLY, Aneroid	1	A, E
-6	1617280-1	. HOUSING ASSEMBLY, Aneroid	1	B, C, D
-7	1627503-1	. FITTING ASSEMBLY, Barb	1	A, E
-8	1617213-1	. BAFFLE, Inlet	1	B, C, D
-9	815840-2	. SCREEN	1	B, C, D

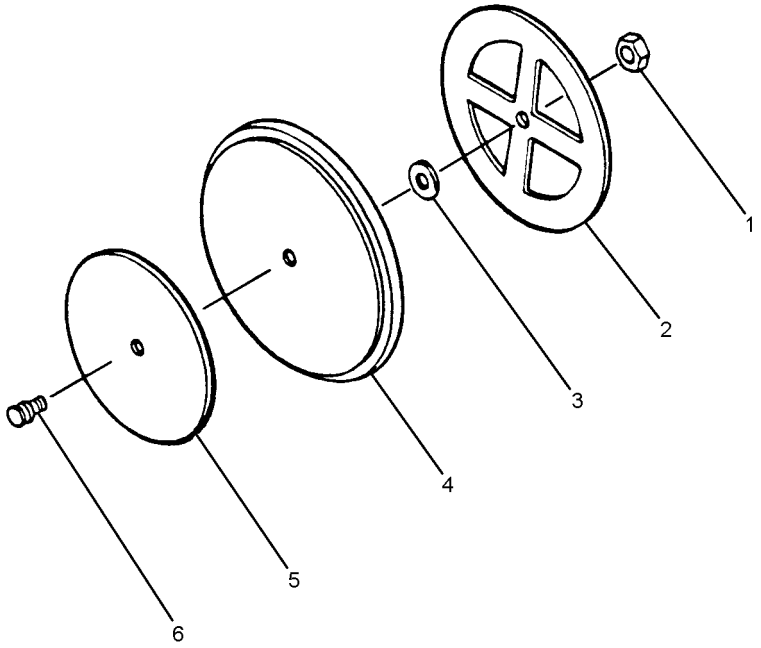
Notes: 1. If aneroid housing P/N 1647663-1 and test port assembly (figure 13-6) are installed on regulator P/Ns 3260011-0101, 3260011-0701, and 29270-10A-A1, then Usable On Code A will apply to regulators.



013013

Figure 13-13. Relief Valve Assembly

Figure and Index Number	Part Number	Description 1 2 3 4 5 6 7	Units Per Assembly	Usable On Code
13-13	1619048-4	. VALVE ASSEMBLY, Relief . . . . . (figure 13-6 for NHA)	REF	
-1	92-1660-00	. NUT, Elastic stop (99251 SCD 1624848-1)	1	
-2	1625025-1	. RETAINER, Spring	1	
-3	1619070-7	. SPRING, Helical compression	1	
-4	1617241-1	. GUIDE, Valve	1	
-5	1617243-1	. GASKET (KC)	1	
-6	1617244-1	. DISC, Valve	1	
-7	1620717-1	. SEAT, Relief valve	1	



013014

Figure 13-14. Diaphragm Assembly

Figure and Index Number	Part Number	Description 1 2 3 4 5 6 7	Units Per Assembly	Usable On Code
13-14	1600632-4	. DIAPHRAGM ASSEMBLY ..... (figure 13-6 for NHA)	REF	
-1	793515-1	. NUT, Diaphragm (KC)	1	
-2	814442	. PLATE, Diaphragm	1	
-3	1603661-85	. WASHER, Non-metallic	1	A, B, E
-4	814441-3	. DIAPHRAGM	1	A, C, D, E
	1643631-1	. DIAPHRAGM	1	B
-5	1602045-1	. PLATE, Diaphragm	1	
-6	791765-2	. FLANGE, Diaphragm	1	

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FFILO-3031/2SS	13-6-21	
FFILO-304SS	13-6-116	
FFILO-4051/2SS	13-6-38	
	13-6-88	
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MFILO-607SS	13-6-50	
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MS16629-4081	13-6-100	
	13-6-123	
MS16632-4025	13-6-18	
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MS25237-327	13-6-1	
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MS35214-27	13-6-9	
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